Ontario

Minister of Natural Resources

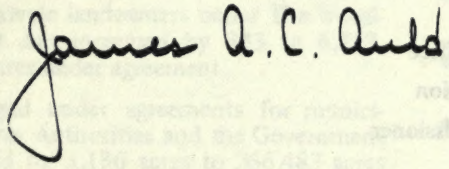
Annual Report
1978

Annual Report

of the Minister of Natural Resources
of the Province of Ontario
for the fiscal year ending March 31, 1978
$1.00

TO HER HONOUR
The Lieutenant-Governor
of the Province of Ontario

MAY IT PLEASE YOUR HONOUR
The undersigned begs respectfully to present to your Honour the Annual Report of the Ministry of Natural Resources for the fiscal year beginning April 1, 1977, and ending March 31, 1978.



JAMES A. C. AULD
Minister

Ontario

Ministry of
Natural
Resources

Contents*

3 **Goal**

3 **Highlights**

5 **Forest Resources Group**

5 Forest Resources Branch
7 Timber Sales Branch

9 **Mineral Resources Group**

9 Mineral Resources Branch
11 Ontario Geological Survey

14 **Outdoor Recreation Group**

14 Fisheries Branch
16 Provincial Parks Branch
18 Wildlife Branch

20 **Lands and Waters Group**

20 Lands Administration Branch
21 Land Use Co-ordination Branch
21 Surveys and Mapping Branch
23 Engineering Services Branch
24 Conservation Authorities Branch

26 **Aviation and Fire Management Centre**

27 **Finance and Administration Group**

27 Adminstrative Services Branch
28 Personnel Services Branch
29 Affirmative Action Program
30 Financial Services Branch
32 Information Services Branch
33 Internal Audit Services Branch
33 Legal Services Branch

33 **Policy and Priorities Office**

33 **Management Improvement Office**

34 **Program Management Evaluation**

34 **The Mining and Lands Commissioner**

**Related information of interest is reported in Statistics, 1978.*

Goal

The goal of the Ministry of Natural Resources is defined as follows:

"To provide from Crown lands and waters, and to encourage on private lands and waters, a continuing combination of resource development, outdoor recreation and quality environment most consistent with the social and economic well-being of the people of Ontario."

Highlights of the fiscal year ended March 31, 1978

- The first report on heat loss and insulation performance, as interpreted from thermography, was presented to householders in Lindsay by the Ontario Centre for Remote Sensing.
- A total of 560 million cubic feet of wood was harvested on Crown lands; the stumpage value was $32 million.
- Ontario's forests were planted with 48 million trees raised in Ministry nurseries.
- On Crown lands, 381,521 acres of forests received silvicultural treatment and an additional 115,082 acres were marked for regeneration and tending.
- Agreements with private landowners under The Woodlands Improvement Act increased by 843 to 6,217 bringing 277,874 acres under agreement.
- The forests managed under agreements for municipalities, Conservation Authorities and the Government of Canada increased by 3,186 acres to 266,483 acres under The Forestry Act.
- The Ministry maintained 5,608 miles of forest access roads and shared in the maintenance of 434 miles of private forest roads.
- The Ontario Geological Survey sent out 48 field parties in 1977 to map and record rock formations and geological environments in selected areas.
- Government payments under the Mineral Exploration Assistance Program amounted to $445,863, bringing the total payments since 1971 to $2,547,855.
- The number of provincial parks increased by four to 126 with the opening of Murphys Point, a recreational park, and three nature reserves – East Sister Island, Ojibway Prairie and Peters Woods.
- Visitors to provincial parks numbered 10,431,166 in 1977 and nearly one in five participated in the activities of the interpretive program. Campers in the parks numbered 1,371,039.
- The Ministry managed 15,000 miles of canoe routes in provincial parks and on Crown lands.
- Under the winter trails recreation program, $500,000 was made available in grants to clubs and agencies to improve the grooming on more than 8,000 miles of snowmobile and ski trails.
- About 1,400 water access points were maintained on public land for boaters.
- The Ontario Trails Council received 352 briefs from the public during its two years of activity. The Council's final report presented 90 recommendations to the Minister of Natural Resources.
- A total of 636,120 fishing licences was sold to non-residents in 1977.
- The commercial fish harvest in Ontario waters in 1977 was 51.8 million pounds, 6.7 million pounds larger than in 1976. The ex-vessel value was $14.5 million, up $2.0 million.
- Ontario waters were stocked with 8.3 million fish and 7.7 million fish eggs.
- In a continuing inventory, 681 lakes (300,000 ha) and streams (300 km) were surveyed in 1977.
- A total of 560,834 hunting licences was sold to Ontario residents and 29,095 to non-residents in 1977.
- A total of 32,126 new hunters was trained in 1977, bringing to 452,298 the number of hunters trained in Ontario since the hunter safety training program began in 1957.
- The moose population appeared to be stabilizing at about 80,000 animals south of the 11th base line. Standards and guidelines for moose habitat management were completed.
- A program to produce a breeding population of wild Canada geese in southern Ontario has increased the flocks to 20,000 geese.
- The wild fur pelts taken by 13,775 Ontario trappers in 1977 were valued at more than $11 million.
- Acting under both provincial and federal legislation, Conservation Officers took actions that resulted in 6,376 seizures and 7,166 convictions.
- A total of 12,342 acres of private land was acquired for government purposes, bringing the acquisition since 1962 to 625,000 acres.
- Field offices were granted approvals for 313 water control projects.
- Grants to Conservation Authorities amounted to $27.5 million under The Conservation Authorities Act.
- Forest Fire Control and Air Service Branches were combined to form the Aviation and Fire Management Centre, established in Sault Ste. Marie.
- Forty-eight regulations were made under Acts administered by the Ministry and 447 Orders-in-Council were prepared and processed.

Field Organization

Ministry of Natural Resources
Regions and Districts in Ontario

Forest Resources Group

The Forest Resources Group replaced the Division of Forests in the Ministry reorganization which began on December 1, 1977, with the establishment of Forest Resources Branch, amalgamating two branches, Forest Management and Forest Research, the latter continuing as the Ontario Forest Research Centre. Consisting of the new branch and Timber Sales Branch, the new Group succeeded the Division as of April 1, 1978.

Forest Resources Branch

The objective of the Branch is to produce optimum and continuous industrial, social and environmental benefits from public forests and to encourage and assess similar production on private lands in Ontario.

Ontario Forest Research Centre

The Ontario Forest Research Centre continued to provide scientific and technical knowledge and information to improve the management of forest resources in Ontario.

In northern Ontario, regeneration of the spruces, management of balsam fir, and aspen regeneration on upland sites of the spruce-fir-aspen forest are being studied. Experiments deal with lengthening of the planting season, the performance of planted black spruce stock, seed production, stand development of the mixed wood forest, and the quality of aspen regeneration.

For artificial regeneration of forest land throughout Ontario, suitable planting stock must be produced and it must be able to grow adequately when planted. Studies on stock production and performance of conifer stock range from seed factors through nursery practices, lifting, cold storage and transportation to survival and growth after planting.

The potential growth of the forest of the future depends not only on the techniques used for their establishment, but also on the genetic characteristics which govern potential growth. Tree improvement and breeding research in conifers, poplars and some other broad-leaf species were continued, providing management with new plant materials.

Studies in spruce are far advanced and deal with genetic variability of seed source, breeding of hybrids, and studies on soil requirements of these hybrids.

Blister rust-resistant hybrid white pine is being developed. Improvement of genetic quality of jack pine seed is sought through selection and testing. Substantial gains are anticipated in a relatively short time with the larch genus.

Important new options have been provided to forest land management as a result of the breeding of hybrid poplars. That breeding program provides suitable material for pulpwood production in intensively managed plantations on marginal or sub-marginal farmlands (short-rotation poplar); for wood fibre, energy and food production on densely grown, intensively managed, frequently harvested coppices on farmlands (poplar farming); and for veneer and pulpwood production in forest-type plantations on cut-over woodlands.

Machinery is being developed to expedite the production of nursery stock and to harvest the crop of poplars. Other studies deal with the rooting ability of cuttings, resistance to frost, diseases and insects, and with growth and yield in relation to soil features and biomass characteristics.

The broad-leaved forests of southern Ontario have a considerable potential for the production of highly valuable lumber and veneer and for general recreational use. Methods in thinning and logging are being developed to satisfy various uses.

To control development of defect on sugar maple, studies are dealing with principal factors that cause defect and with concepts and techniques that will promote high-value growth.

Mathematical models are being tested to quantify the interaction effect of variables on yellow birch regeneration and to provide management with a better understanding of the effects of treatments on stand development and growth.

Research is progressing in the development of cultural techniques for the establishment of valuable tree species, such as walnut and oak, on upland soils of abandoned farmland in southern Ontario and for the tending of resultant forests and woodlots. On lowland swamp sites, work is aimed at rehabilitation of stands with a variety of improved stock. Production of non-fibre crops, such as maple sap, nectar and nuts, is also being investigated as part of forest land management practices on suitable sites.

The knowledge of soil and site in relation to tree growth, or forest productivity, is fundamental for planting and managing a new forest crop. Recent constraints have severely reduced the research capability to deal with this important field of investigation. Current studies deal with the establishment of new forest stands and those already established. Growth and prediction of yield of pine and tolerant hardwood are being examined; and at a broader scale, improvements in forest inventories are being developed.

Silviculture

Tree Seed Program

The inventory of forest tree seed in storage at the Ontario Tree Seed Plant, Angus, as of June 1, 1977, was 3,545,000,000 viable seeds of 92 species, weighing 15,500 kgms and valued at $950,000.

The year 1977 was a good crop year for many of the species used in the reforestation program.

1977 Seed Crop by Species	Hectolitres Collected
White Pine	5,266
Red Pine	361
Jack Pine	16,620
White Spruce	148
Black Spruce	87
Norway Spruce	143
White Ash	77
Red Oak	82
Black Locust	50
Black Walnut	1,618
Other Species	278
Total	24,730

Seed Distribution

A total of 1,638,243,000 viable seeds was used to carry out 214 regeneration projects in the Province during 1977, an increase of 236,763,000 viable seeds over 1976. This seed was used in four main programs.

Nursery Stock Production	384,227,000
Tubelings	16,441,000
Direct Seeding	1,215,077,000
Research and Miscellaneous	22,498,000
Total Viable Seed	1,638,243,000

Classification of Cut-Over Forest Land, 1977-78

Area in Acres

Cutting Method	Available For Regeneration Treatment	Natural Regeneration Without Treatment	Not Available For Regeneration Treatment	Total
Clear Cut	161,682	75,286	64,329	301,297
Selection Cut	–	65,353	–	65,353
Partial Cut	–	–	97,868	97,868
TOTAL	161,682	140,639	162,197	464,518

Regeneration and Tending of Forest Land, 1977-78

Area in Acres

REGENERATION	Crown Land	Agreement Forests	W.I.A.	Sub-Total	Other Patent Lands	Total
Planting Nursery Stock	42,509	1,051	9,496	53,056	6,499	59,555
Container Stock	5,860	40	46	5,946	–	5,946
Seeding	71,145	–	–	71,145	–	71,145
Scarification	11,637	25	–	11,662	–	11,662
Strip Cutting	8,301	–	–	8,301	–	8,301
Seed Tree Cutting	14,304	–	–	14,304	–	14,304
Shelterwood Cutting	20,346	460	403	21,209	–	21,209
Clear Cutting	5,251	211	–	5,462	–	5,462
Total	179,353	1,787	9,945	191,085	6,499	197,584
TENDING						
Hand Cleaning	19,417	1,615	663	21,695	–	21,695
Herbicide Spraying	34,089	369	1,514	35,972	6,905	42,877
Thinning Improvement Cuts	42,683	5,689	10,781	59,153	1,015	60,168
Pruning	2,003	1,442	1,060	4,505	–	4,505
Fertilization Drainage	451	755	147	1,353	–	1,353
Total	98,643	9,870	14,165	122,678	7,920	130,598
TOTAL AREA TREATED	277,996	11,657	24,110	313,763	14,419	328,182
Site Preparation For Regeneration	103,525	957	2,373	106,855	–	106,855
Marking For Regeneration and Tending	115,082	8,891	14,147	138,120	9,190	147,310

Tree Improvement

Plus trees selected . . . . . 287 trees
Scions, Grafted 10,681
Grafted stock, Outplanted . . . . . 1,524 trees
Seed Collection Areas* . . . . . 14,025 acres
Seed Production Areas . . . . . 685 acres
Seed Orchards . . . . . 205 acres

This program is designed to improve seed quality and increase the quantity of available tree seed to meet production requirements.

Planting Stock

Distribution, conifers 45,351,140
hardwoods 2,940,702
Total 48,291,842
Production Targets seeded 72,130,000

Private Lands

The Woodlands Improvement Act	Agreements	Acres
New agreements activated, 1977-8	843	37,626
Agreements in effect March 31, 1978	6,217	277,874

Number of Trees Planted: 7,158,575.

These operations are carried out on private land under The Woodlands Improvement Act agreements. The acreage treated is an integral part of forest production targets, particularly in southern Ontario where there is no significant area of Crown land.

**A term used to describe superior stands which are reserved and logged periodically to supply seed and then regenerated with the same seed source to maintain them as gene pool reserves.*

Agreement Forests

Agreements Holders	Added 1977-8	Released 1977-8	Acreage
1 Government of Canada	.....	.....	3,532.00
23 Conservation Authorities	749.56	111.30	94,262.19
19 Counties	1,131.24	64.51	145,114.29
10 Townships	.....	.....	3,029.24
6 Regional Municipalities	1,481.00	.....	20,545.03
59 Totals	3,361.80	175.81	266,482.75

The agencies reported above have forest management agreements with the Minister under The Forestry Act. The agencies' forests are an integral part of forest production targets, of particular importance in districts with no significant Crown land areas.

Advisory Services

1. Number of public inquiries serviced	76,659	
2. Number of field inspections made	7,705	
3. Number of forest management programs prepared	519	
4. Total area for which management programs were prepared	22,168	acres
5. Trees purchased and planted by private landowners	7,634,143	
6. Timber marked for harvesting: Sawtimber	3,709,884	cu. ft.
Pulpwood and Fuelwood	19,772	cords
7. Activities with youth groups	250	groups

8. Public education activities and services	1,501	items
9. Days of forestry instruction provided to schools, colleges, universities	346	days

The data (above) are a measure of the forestry extension program offered to all landowners. An improvement in landowner management practices is desired to ensure the establishment and maintenance of private forests for the production of forest products and forest values.

Pest Control

Two insect species, the eastern spruce budworm and the forest tent caterpillar, continued to devastate Ontario's forests in 1977. The spruce-fir forest, defoliated by budworm in 1977, declined slightly to 34.8 million acres (14.1 million hectares), five per cent less than in 1976.

An aerial spraying program was conducted on 10,500 acres in the Northern and Northeastern Regions to protect the spruce-fir forest in several provincial parks, tree nurseries and white spruce seed production areas. Two chemical insecticides, Natacel and Orthene, were used. An additional 190 acres of provincial campgrounds were treated with a bacterial insecticide, Thuricide.

Forest tent caterpillar defoliated 30 million acres of hardwood forest in three separate outbreaks in the Northwestern and Northern Regions and much of southern Ontario. Aerial spraying was conducted on 4,400 acres in six provincial parks in the Parry Sound and Bracebridge Districts to preserve the recreational value of the parks. Thuricide was used to treat most of the area, and three chemical insecticides, Dylox, Dimitin and Orthene, were applied experimentally to 400 acres.

A third insect pest, oak leaf shredder, has caused severe damage to red oak stands in southern Ontario in recent years. Awenda Provincial Park was heavily defoliated in 1975 and 1976, resulting in deterioration and mortality of oak trees. To prevent further deterioration, the 1,500-acre park was sprayed aerially in 1977 with insecticides, Sevin and Orthene.

Several other insect and disease pests created serious problems in various districts and required treatment. Over 3,000 acres of red pine and jack pine plantations were sprayed to control red-headed pine sawfly and 120 acres were treated with red-headed pine supply virus by scientists from the Canadian Forestry Service.

Small-scale programs were carried out to control other conifer sawflies, white pine weevil and wild currant, the alternate host for white pine blister rust. Developmental work on the use of a harmless fungus, *Peniophora gigantea*, as a biological control for *Fomes* root rot, was continued.

In total, 26,000 acres were treated for control of insects, diseases and rodents in 1977.

Timber Sales Branch

The major responsibility of the Branch is the orderly disposition of the Province's Crown timber resource through the enactment of major sections of The Crown Timber Act. This is accomplished through the continuous inventory of the forest resource, the review and approval of forest management plans, the allocation of the Province's Crown timber to the forest industry by various statutory methods, the licensing of forest industry mills, the measurement of the harvested volume of Crown timber, and the monitoring of factors affecting the performance of the Province's forest industry.

Forest Resources Inventory

The Forest Resources Inventory Section supervised the tendering, quality checking and indexing of 13,500 square miles of aerial photography of forest land in northern Ontario. In addition, field sampling, photo interpretation, compilation, and drafting of forest stand maps was completed with the co-operation of the forest industry on 18,500 square miles in northern Ontario.

Management Plans

Forest management plans provide the broad framework within which forest operations are conducted. More detailed operating plans for shorter time periods identify the Crown timber stands to be harvested, regenerated and tended, and the roads and other improvements required in Crown, company and Agreement Forest management units.

STATUS OF MANAGEMENT PLANS, March 31, 1978

	Forest Management Units					
	Crown		Company		Agreement	
Areas in Square Miles	No.	Area	No.	Area	No.	Area
Approved Standard Plans	64	70,151	2	13,566	35	259
Plans Submitted for Approval	–	–	2	6,130	2	47
Plans being Prepared and/or Revised	15	27,994	8	27,146	23	105
New Inventory Required	3	11,362	14	30,127	–	–
Inactive and/or Inaccessible or not under plans	6	19,382	–	–	–	–
Total	88	128,889	26	76,969	60	411

Timber Allocation

Crown Timber Licences

Areas under Licence March 31, 1978	Number	Square Miles
Under Section 2, Crown Timber Act	28	13.1
Under Section 3, Crown Timber Act	386	93,125.7
Under Section 5, Crown Timber Act	14	27.0
Total	428	93,165.8

Mill Licences

March 31	1975	1976	1977
Sawmills, 8-hour capacity			
Lumber, capacity over 50 M fbm	53	51	58
Lumber, capacity 10M to 50M fbm	98	90	99
Lumber, capacity under 10M fbm	569	547	588
Miscellaneous	45	27	31
Veneer Mills	23	26	24
Pulp Mills	23	23	22
Total	811	764	822

The Crown timber resource is allocated to the Province's forest industry in accordance with forest management principles and industrial requirements. Crown timber harvesting licences provide the Province's forest industry with the legislative authority to harvest Crown timber on an annual, allowable-harvest basis. The licences take several major forms and are specific as to geographic area, tree species, volumes, stumpage payments and other charges,

and various harvest control measures.

Forest industry mills are licensed to operate with respect to Crown and private timber supplies in a specific locality.

Forest Industry Development

The Forest Industry Development Section is concerned with the growth and development of the various components of the Province's forest industry by monitoring the demand for, and the supply of, timber products and the pattern of trade in these commodities, and by analyzing resource taxation and pricing. The Section assists in industrial expansion and regional development through industrial liaison, policy development and economic analyses.

Pulp Chips, 1976

Ontario Production	Number of Mills	Bone Dry Tons
Shipments	99	1,473,724
Inventory Adjustment	—	—
Total	99	1,473,724

Consumption of Ontario Chips by Jurisdiction	Number of Mills	Bone Dry Tons
Ontario	18	1,254,624
Quebec	7	134,075
Manitoba	1	1,657
U.S.A.	4	83,368
Total	30	1,473,724

Pulp Chips, 1977 (Preliminary)

Ontario Production	Number of Mills	Bone Dry Tons
Shipments	105	1,765,417
Inventory Adjustment	6	4,780
Total	105	1,770,197

Consumption of Ontario Chips by Jurisdiction	Number of Mills	Bone Dry Tons
Ontario	17	1,552,381
Quebec	4	123,984
U.S.A.	3	89,052
Total	24	1,765,417

Wood Measurement

Measurement, or scaling, determines the volume of timber harvested from Crown lands and Agreement Forests. It is the basis for the determination of public revenue and forest production statistics related to the forest industry. Only licensed scalers, approved by the Ministry, may be employed to measure Crown timber for Ministry purposes. These scalers are required to attend standardized scaling refresher courses on a regular basis so that they are kept fully versed in the latest measuring techniques and to ensure that high, uniform scaling standards are maintained. Wood measurement practices in Ontario are under constant review, and new methods are continually explored to ensure that scaling methods keep abreast of the latest harvesting techniques.

Volume and Value of Wood Cut from Crown Land, 1977-78

Tree Species	Volume in Cubic Feet	Bonus	Crown Dues	Stumpage Value
SOFTWOODS				
White Pine	20,726,415.36	$ 707,475.44	$ 1,166,514.97	$ 1,873,990.41
Red Pine	6,152,458.75	200,344.63	340,422.20	540,766.83
Jack Pine	176,958,225.99	384,581.41	10,004,961.28	10,389,542.69
White Spruce	3,025,119.29	5,484.71	172,431.77	177,916.48
Black Spruce	25,173,585.26	34,855.53	1,434,894.84	1,469,750.37
Spruce, Mixed	237,070,643.80	829,349.22	13,423,055.18	14,252,404.40
Hemlock	2,050,229.68	26,709.84	115,341.25	142,051.09
Balsam	18,688,058.91	56,603.49	1,037,027.60	1,093,631.09
Cedar	434,247.90	9,403.66	24,221.71	33,625.37
Tamarack	68,334.47	135.86	3,884.03	4,019.89
Softwoods, Mixed	250,207.70	63.79	2,943.62	3,007.41
Total Softwoods	490,597,527.11	2,255,007.58	27,725,698.45	29,980,706.03
HARDWOODS				
Maple	8,523,432.19	162,176.18	624,711.74	786,887.92
Yellow Birch	3,924,467.45	205,873.88	306,047.69	511,921.57
White Birch	2,341,303.33	35,380.85	27,938.41	63,319.26
Oak	314,937.10	14,261.80	19,490.18	33,751.98
Beech	519,064.63	16,930.83	35,291.88	52,222.71
Ash	46,442.38	2,210.35	3,147.08	5,357.43
Elm	21,893.81	674.87	1,995.88	2,670.75
Basswood	273,970.20	15,453.74	16,298.76	31,752.50
Butternut	398.67	3.40	27.70	31.10
Cherry	29,489.91	399.75	2,393.06	2,792.81
Poplar	37,419,123.63	126,845.50	445,874.75	572,720.25
Hardwoods, Mixed	15,996,912.00	121,842.89	191,025.13	312,868.02
Total Hardwoods	69,411,435.30	702,054.04	1,674,242.26	2,376,296.30
TOTAL	560,008,962.41	2,957,061.62	29,399,940.71	32,357,002.33

Mineral Resources Group

The Mineral Resources Group replaced the Division of Mines in the reorganization of the Ministry which began late in 1977. The Group includes Mineral Resources Branch and the Ontario Geological Survey which replaced Geological Branch. Mineral Research Branch was replaced by Geoscience Laboratories within the Ontario Geological Survey. The formal completion date of the new Group was April 1, 1978.

Mineral Resources Branch

The prime objective of the Branch is to assure the orderly development and optimum use of provincial mineral resources in line with the Ministry's policy of broadening the base of mineral development and processing in Ontario. The most important function of the Branch is to provide the Minister of Natural Resources with in-depth researched information and mineral policy options, as well as to ensure equitable mining tax assessments. Major areas of responsibility for the Branch are as follows:

(a) Development and administration of mineral resource policies;

(b) Analysis of the effectiveness of present public policies in various jurisdictions in respect of mineral resource development;

(c) In-depth world-wide mineral commodity studies on each mineral element in provincial mineral reserves, with priorities set for nickel, copper, zinc, iron ore, precious metals, uranium and structural materials;

(d) Administration of The Mining Tax Act, The Petroleum Resources Act, The Pits and Quarries Control Act and certain parts of The Mining Act;

(e) In-depth analysis of the existing tax systems to develop a more effective mineral taxation policy;

(f) Economic studies of metal and mineral markets and factors affecting Ontario's mineral output;

(g) Federal-Provincial liaison on mineral resources problems;

(h) Determination of an inventory of the Province's mineral resources, commodity by commodity, and commercially viable ore reserves;

(i) Continuing analysis of the mineral reserves position against present and projected world supply and demand for minerals;

(j) In-depth studies of mining and exploration company decision-making processes;

(k) Preparation of plans to stimulate exploration for, and development of, mineral resources in Ontario;

(l) Studies on economic behaviour of multi-national mineral resources companies;

(m) Co-ordination of external research studies to evaluate junior and senior mine financing aspects; and

(n) Development of computer models to assess the impact of taxation and environmental controls on the Ontario mining industry.

Metallic Minerals

The objectives of the Metallic Minerals Section are as follows:

(1) To provide effective metallic mineral policy options for the Mineral Resources Group based upon in-depth research on a commodity or topical basis;

(2) To monitor metal market trends as well as technological progress in the mineral sector; and

(3) To monitor policy developments in other jurisdictions with respect to their anticipated impact on Ontario metal mining and processing.

The discussion paper entitled "The Ontario Metal Mining Industry – Present and Future" was released in February, 1977. It pointed out that the Ontario mining industry was faced with severe problems such as depressed metal markets, huge inventories and associated layoffs, restricted cash flows, heavy debt burden and inadequate rate of return. Major policy issues were highlighted.

It is still a fact of life that the health of the Ontario mineral sector depends mostly on the health of the economies of the industrialized nations such as the United States, the E.E.C. and Japan.

On a commodity basis, a study entitled "Towards a Nickel Policy for the Province of Ontario" was completed and is expected to be published as a policy background paper in 1978. The Nickel Study is the first compendium on the nickel industry anywhere.

The paper entitled "The Ontario Zinc Industry on a Global Scene and Various Government Policies" was accepted for presentation at the Plenary session of the Eleventh Commonwealth Mining and Metallurgical Congress to be held in Hong Kong in May, 1978. This paper was based upon the previous year's zinc commodity study.

The mineral inventory work, carried out in co-operation with Geological Survey of Ontario staff, forms an important part of the data base for analysis and formulation of policy options for the Government of Ontario. The mineral inventories on uranium and zinc are completed, – subject to periodic routine updating, – and the nickel inventory is well under way.

The first stage of the simulation model of investment effects of taxation and environmental changes was programmed on computer. The completed report on Stage II was broken down and expanded into several separate background papers, three of which – on mineral conservation, on the computer model, and on factor substitution and technical change in mining – are now being printed.

A paper on environmental problems of the mining industry, arising out of the Stage II study, is being edited. The major part of the third and final stage of that study – (the development of a prediction of consumption and pricing ranges for our major metallic minerals) is proceeding on schedule.

Consultants' reports on the changing structure of mine financing and on junior mine financing were completed and submitted to the Ministry for evaluation. These reports are expected to be published in 1978.

The participation of the Ministry in aspects of Syncrude has resulted in major savings to the project through recommendations in the areas of mine planning and equipment selection.

Section staff prepared comprehensive briefing material for the staff of the Hartt Commission. Involvement in Onakawana will increase. Two mine hazard lands studies have been commissioned.

Liaison with organs of the federal government, provincial governments and some foreign jurisdictions, as well as with mining company representatives, continued on matters pertaining to Ontario mineral policy and mineral industry matters of mutual concern.

As required the Section undertakes detailed analysis and recommendations of alternative solutions for any other problems that affect the metallic minerals sector of the economy, as they assume importance in the eye of the public, the industry or this Ministry.

Industrial Minerals

The Industrial Minerals Section has two major functions:

Acquiring and interpreting relevant data on industrial minerals (non-metallics and structural materials) with the objective of presenting government with options for viable provincial policies concerning the extraction and use of these materials; and

Administering policy matters related to The Pits and Quarries Control Act, 1971.

The policy function will be developed on a progressive basis to deal with each industrial mineral and rock commodity by implementing the processes outlined as major areas of responsibility for the Branch. In addition, the Section establishes liaison with and is able to make its expertise available to producers and consumers, the general public, Regions, Districts and other Branches of the Ministry of Natural Resources, and governments at all levels.

The Section's function in administration of The Pits and Quarries Control Act involves a dual role. On one hand, consultation and guidance are continuously provided to the Ministry's field offices which, through their mineral resources supervisors and quarry inspectors, are responsible for implementing the requirements of the Act. On the other hand, the Section is directly responsible for processing pit and quarry applications from northern Ontario in Sudbury and Sault Ste. Marie which have not yet assumed their responsibility.

In March, 1977, the Ministry's Eastern Region became the third region, after Central and Southwestern Regions, to assume responsibility for processing pit and quarry licences. This shift in responsibility is consistent with the Government's plan for decentralization of operations.

A major focus of activity in 1976 and 1977 was the Section's involvement in the Ontario Mineral Aggregate Working Party which was appointed in December, 1975, by the Ministry to investigate the problems of the aggregate industry in Ontario. The Working Party was comprised of people from government and other groups most concerned with the problems associated with pit and quarry operations. In January, 1977, the Working Party presented its report, "A Policy For Mineral Aggregate Resources Management In Ontario," to the Cabinet. It offered 64 recommendations on how the aggregate industry problems could be resolved. As a direct result of this Report, the Section is now involved in writing a new Act to regulate pit and quarry operations in Ontario.

Mineral aggregate studies for the Sudbury and Thunder Bay areas of northern Ontario have been contracted out to consultants and should be completed in the summer of 1978, bringing to five the number of such reports.

Two research studies on rehabilitation were carried out in the summer of 1977 with funding from the Industrial Minerals Section. One study on abandoned pits and quarries, conducted jointly with the Regional Municipality of Waterloo, will be published in 1978. The other study, connected with the University of Guelph, examined the state of rehabilitation in licensed aggregate sites on specific areas of southern Ontario. A bibliography on the rehabilitation of pits, quarries and other surface-mined lands has been compiled and published by the Ontario Geological Survey.

At the end of 1977 there were 278 geographic townships designated under The Pits and Quarries Control Act, unchanged from the previous year. A total of 1,600 pit and quarry licences have been issued in the designated areas.

Mining Tax Assessment

With reorganization completed, the Mining Tax Assessment Section now has a full-time mine assessor, six assistant mine assessors and one contract assistant mine assessor. The assistant assessors reconcile the returns filed with the taxpayers' accounting records and prepare draft assessments for the mine assessor.

Mining tax returns received for 1976 and 1977 indicated estimated liabilities under The Mining Tax Act of $62,438,000 and $41,041,000, respectively.

During the 1977 fiscal year, 57 assessments were issued. The assessed taxes amounted to $13,119,285.

Petroleum Resources

The Petroleum Resources Section is responsible for all the activities associated with the oil and gas exploration, drilling and production industry in Ontario. These functions include the conservation and development of Ontario's petroleum resources in conjunction with acceptable environmental and safety standards.

Geological and engineering data are collected on all wells drilled in the Province and consolidated in the form of publications and maps which are made available to the public to encourage the equitable development of Ontario's petroleum resources.

The Section's staff includes qualified geologists, reservoir engineers and resource officers. As an integrated regulatory and scientific agency, it is able to advise Government on all problems arising from legislation and the wide variety of technical and scientific problems related to oil and gas exploration and development in Ontario and other areas of Canada.

The Section, operating under the authority of The Petroleum Resources Act and Regulations made thereunder, requires the submission of all information collected in the drilling and production of wells. This information is submitted in the form of core and drill cutting samples, engineering and geological completion reports, fluid analyses, monthly and annual production reports, and a variety of reports required of the various licences issued.

All data are validated by the appropriate regional resource officer, and interpreted and transcribed by geologists and engineers into readily accessible forms by way of hard-copy documents, microfilm, and computer output for both internal and public use.

Through its drafting unit, the Section compiles and constructs 15-minute quadrant maps for southwestern Ontario, showing all oil and gas wells and regulation spacing areas. The maps are updated daily and made available to the public.

The geological well samples are washed, bottled and stored in the repository facilities located in London. Here they are made available to geologists and engineers from industry and universities for research studies.

Under the authority of The Mining Act and Ontario Regulations 546/71, the Section regulates the disposition of mineral rights within Lake Erie. To the end of 1977, the Section had issued 2,469,559 acres under Licence of Occupation and 232,607 acres under production leases to a total of seven operators.

During 1977 a total of 188 wells was drilled in Ontario, including 65 wells in Lake Erie. Off-shore operations are closely scrutinized by the resource officer staff, normally operating on a 24-hour basis and staying aboard the drilling vessel during critical phases of operation.

Since 1858 more than 100,000 oil and gas wells have been drilled in Ontario, and many have never been properly plugged. As a result the Section, through Government funding, administers the plugging of hazardous wells on a priority basis, and in turn works closely with the Ministry of Treasury, Economics and Intergovernmental Affairs and other agencies in this regard.

Mineral Economics

The Mineral Economics Section is responsible for the following functions:

1. Economic and statistical research as an input to the development of mineral policy options;
2. Development and maintenance of an economic and mineral commodity data base;

3. Annual survey and preparation of annual reports on
(a) Mineral Industry Statistics, and
(b) Mining Accident Statistics and Employment;

4. Collection and analysis of national and international data on all metals and minerals commodities, prices, markets, consumption trends, tariffs, duties and export-import restrictions;

5. Publication of Annual Statistical Reports on Ontario's Mineral Industry;

6. Studies on economic impact of mineral policies in other provinces;

7. Consulting services in the field of mineral statistics to other branches of the Ministry, other Ministries and the interested public; and

8. Administration of Part X – Refinery Provisions of The Mining Act.

Ontario's Mineral Statistics for 1971-1973 was published in 1977 and the draft report on 1974 statistics was completed. The information and statistical data in these and previous reports have been made available to the interested public on an open file.

In addition to the statistical breakdown of data by major economic areas, Northwestern, Northeastern and Southern Ontario, as well as by major mining centres, the Section also tabulated the 1976 values of mineral output for each of the newly established Natural Resource regions.

The Section provided services in the field of mineral statistics to the staff of the Ministry, other government agencies and the interested public.

Economic and statistical research on mineral resources was reoriented from pure research and assembly to applied research, targeted to output requirements.

At the 1977-8 fiscal year-end, the responsibility for Ontario's mineral statistics was transferred by order of the Management Board of Cabinet from the Central Statistical Services of the Ministry of Treasury, Economics and Intergovernmental Affairs to the Ministry of Natural Resources.

The centralized statistical function was assigned to Mineral Resources Branch and then to Information and Mineral Statistics Section, the successor to Mineral Economics Section.

Ontario Geological Survey

The Ontario Geological Survey provides information on the geology and mineral resources of Ontario to encourage industrial exploration, to provide a basis for land-use planning, and to aid in the development of non-renewable resource policies.

Geological, geophysical and geochemical surveys identify favorable locations for mineral and aggregate deposits and provide increased knowledge and understanding of the geological history of Ontario. Existing data on mineral deposits are compiled, and areas having significant potential identified. Educational programs and published reports and maps are made available to the public. Additional scientific contributions are made by presenting papers and leading field trips at geoscience conventions.

The Ontario Geological Survey administers the Mineral Exploration Assistance Program (MEAP) whereby the Government reimburses an individual or company one-third of the cost of an approved exploration expenditure (maximum $100,000) in any of six designated areas.

On November 15, 1977, the Minister of Natural Resources announced that in 1978 the Ontario Geoscience Research Fund would sponsor applied research at Ontario universities to facilitate mineral exploration by the private sector in Ontario. The research projects will be complementary to, and closely integrated with, the work of the Ontario Geological Survey. During the fiscal year the advisory committee, composed of university, industry and OGS representatives, was organized, and university project proposals for 1978-9 funding were submitted.

Precambrian Geology

During the summer of 1977, 22 field crews surveyed and produced interpretive maps of the bedrock in 24 areas of the 600,000 km^2 Precambrian Shield of Ontario. Surveyed areas ranged from 185 km^2 to 3000 km^2 depending upon the detail and scale of the survey. A total of 2,400 km^2 was mapped at a scale of 1:15,840 and a total of about 9,600 km^2 at scales of 1:63,360 or 1:126,720.

The objectives of these surveys are to record the bedrock geology, identify geological environments favorable to the occurrence of mineral deposits, and to identify Precambrian bedrock geology features which influence mineral concentration and the utility of the land. Mapping focussed on seven major geological belts and one province-wide feature.

While the potential for any mineral commodities is not overlooked, work on the Uchi Belt projects (between Red Lake and Slate Falls), on the Wabigoon Belt projects (which included commencement on a regional study of the volcanic belt extending from Crow Lake to Savant Lake), and on the Abitibi-Wawa Belt projects (scattered from Kirkland Lake to Hemlo), was initiated principally on the anticipated base metal, precious metal, and molybdenum potential of these belts.

Completion of a helicopter supported reconnaissance of the English River Belt from Marchington Lake to the Manitoba Boundary, and detailed mapping in the Quetico Belt, in the Southern Province between Sault Ste. Marie and Sudbury, and in the Grenville Province of southeastern Ontario had highest significance for uranium and industrial mineral potential. A province-wide study of alkalic-carbonatite intrusive complexes with base metal, rare earth, phosphate, uranium and industrial mineral potential was also completed.

In addition to field operations, three geological compilation maps (at scales of 1:253,490 and 1:1,013,760) were prepared and two others were in preparation; and several field trips, papers and talks were prepared for industry, scientific and ministry groups.

Engineering and Terrain Geology

The Engineering and Terrain Geology Section is responsible for the survey and analysis of all geological materials younger than the Precambrian. These include the sedimentary rocks of Paleozoic and Mesozoic age of the James Bay Lowlands and of southern Ontario together with the great variety of glacial deposits of Quaternary age which cover the entire province. Major thrusts in these responsibilities are the stratigraphic mapping of the rocks of these ages and the preparation of an inventory of mineral aggregates throughout the province. An important role is to provide information to, and liaise with, municipalities for aggregate resource planning.

Nine field parties were operational in 1977. Surveys of Quaternary geology were carried out near Thunder Bay, Sudbury and New Liskeard in northern Ontario and in the Strathroy-Bothwell-Ridgetown area, the Sarnia-Perch area and in Bruce, Grey and Renfrew Counties in southern Ontario. Sedimentary rocks were investigated in the Onakawana area in the north and in the Windsor-Pelee Island area in the south. Studies of residual stress in the Paleozoic rocks in the Hamilton area were supported in the late summer and early fall.

Major steps were taken in the preparation of aggregate resources inventories for all townships in southern Ontario designated under The Pits and Quarries Control Act, a task expected to be completed in 1980.

A major project was initiated in northern Ontario with

a start on the engineering terrain evaluation of more than 143,000 square miles north of latitude 46°. This work was contracted out to four consulting companies on behalf of the Ministry of Northern Affairs.

A study of the physiography and surficial geology of an area in northwestern Ontario, initiated by the Ontario Centre for Remote Sensing, was supported by a staff geologist from the Section.

The Section name was changed from Phanerozoic Geology Section in January, 1978.

Geophysics / Geochemistry

Staff scientists of the Geophysics/Geochemistry Section carried out two geophysical projects and one geochemical project during the 1977 summer field season.

Geophysical survey crews carried out gravity measurements at 2,812 gravity stations in the North Bay-Cobalt area (11,750 km² or 4,540 sq. miles). This survey covers parts of the Superior, Southern and Grenville Provinces and the results will reveal further information on the structural characteristics over the Grenville Front.

The Section was also responsible for planning reconnaissance airborne gamma-ray spectrometer and regional lake sediment geochemical surveys which are part of the federal-provincial Uranium Reconnaissance Program. This joint program provides data base information for uranium mineral exploration and for the geological assessment of Ontario's uranium potential.

An airborne gamma-ray spectrometer survey was carried out over the Sudbury, North Bay, Tobermory, Huntsville and the north half of the Lake Simcoe NTS sheets. A regional lake sediment geochemical survey for uranium and basemetals was carried out in the Thunder Bay and Schreiber NTS sheets including the southern half of the Nipigon and Long Lac NTS sheets. The results of these surveys were released in the Spring of 1978.

Two follow-up investigations were carried out in southeastern Ontario as part of the joint uranium program. They were directed toward evaluating the effectiveness of recently published gamma-ray spectrometer and lake sediment geochemical data covering the Pembroke and Kingston NTS sheets, 31F and 31C, respectively.

A new autocartographic laboratory was constructed during the past year and is now operational. This facility was designed with the co-operation of the Surveys and Mapping Branch to develop electronic data processing and plotting techniques to serve a wide variety of resource-related functions requiring the handling of large amounts of numerical data.

The equipment now in place consists of a Calcomp 745 flatbed plotter, a PDP 11/50 computer and two digitizing tables. A full software library of Calcomp plotting routines has been established and tested on the Queen's Park IBM 370 computer and will be used in conjunction with this facility to prepare geophysical, geochemical and geological data in a variety of graphical forms.

Mineral Deposits

The Mineral Deposits Section studies deposits of both metallic and nonmetallic minerals, their distribution, geology, reserves and potential. An important role is to provide reserve data and resource potential estimates for use in government planning, particularly for land use, parks and transportation corridors, and as background for studies by Mineral Resources Branch.

The Section co-operated in the National Uranium Reserves and Resources Appraisal Program and related studies including assembly and computerization of Elliot Lake drill data. A provincial study of nickel-copper resources, particularly of the Sudbury area, is well under way.

Other studies included metal distribution maps for silver and base metals; a series of mineral potential maps of the Precambrian Shield to aid in large-scale regional planning; a peat study in the Thunder Bay-Ignace area; and studies of industrial minerals, including asbestos, silica and marble deposits. In addition, many producing mines and exploration sites were visited on a routine basis.

Mineral Exploration Assistance Program

Government payments under the Mineral Exploration Assistance Program (MEAP) for the fiscal year were $445, 863, bringing the total government expenditure since 1971 to $2,547,855. The six designated areas are in eastern Ontario, Red Lake, Atikokan, Geraldton-Beardmore, Kirkland Lake and Cobalt-Gowganda. Open file reports 5114, 5147, 5209, 5230 and 5251 cover MEAP to March 31, 1978.

Geochronology Laboratory

The Geophysics/Geochemistry Section shares the responsibility for the management of a geochronology program with the Department of Mineralogy and Geology, Royal Ontario Museum.

The Jack Satterly Geochronology Laboratory, which was initiated in 1975 by a grant from the Ministry to the Museum, has added a capacity to give a stimulus to the understanding of Precambrian crustal history. This facility is providing absolute radiometric ages (by the zircon-uranium-lead method) necessary for unravelling the geological history of the rocks in the Precambrian Shield and related mineral deposits. A long-term program of radiometric age investigations is continuing with emphasis on the mineral-rich areas such as the Early Precambrian (2.7 billion years old) metavolcanic belts and, specifically, on stratigraphic correlation problems related to the positioning and timing of ore deposition in these belts. Studies are being conducted in the Kirkland Lake-Timmins, Confederation Lake, Sturgeon Lake, Manitou Lake and English River areas.

Northern Development Program

In the summer of 1977, the former Geological Branch commenced a three-year Northern Development Program, funded by the Ministry of Northern Affairs. The program has three objectives: to stimulate exploration for fossil fuels in Ontario, to stimulate mineral exploration throughout northern Ontario, and to improve the land capability and aggregate potential data base to assist northern community and regional planning.

The 1977-8 program included a study of fossil fuel occurrences in the Onakawana area (Engineering and Terrain Geology Section), airborne surveys to stimulate exploration in the Red Lake and Marshall Lake areas (Geophysics/Geochemistry Section), peat deposits study in the Thunder Bay area (Mineral Deposits Section), Quaternary mapping in the New Liskeard area and engineering terrain analysis for land capability across a large area between 46° and 50° latitude (Engineering and Terrain Geology Section).

Renfrew-Pembroke Program

A four-year mineral exploration incentives program in the Renfrew-Pembroke region was initiated in 1976, with funding from the Ministry of Treasury, Economics and Intergovernmental Affairs. This program is designed to renew mineral industry interest in the area by supplying information on basic geology and its relation to the known mineral deposits, and by locating areas of highest potential for each of the commodities likely to be found.

Field work and studies of collected data continued in three projects commenced last year by the Mineral Deposits Section: industrial mineral potential, base and precious metals potential, and uranium and thorium potential. An aggregate resources inventory was carried out by the Regional Geologist in Huntsville. The Precambrian Geology Section completed a detailed survey of the Clontarf area

and commenced a two-year reconnaissance survey of the Renfrew area.

Resident and Regional Geological Program

Regional and resident geologists' offices were maintained in the following centres: Kenora, Red Lake, Sioux Lookout, Thunder Bay, Sault Ste. Marie, Sudbury, Timmins, Kirkland Lake, Huntsville, Kemptville, Richmond Hill and London.

Regional and resident geologists provide consultative service to government, industry and public on the geology and mineral deposits of the Province. During the year, they conducted visits on a regular basis to operating mines and both active and inactive prospects and provided geoscience data for a variety of land-planning functions.

They also undertook a variety of field mapping projects and specific studies. Examination of gold deposits associated with carbonate rocks in the Timmins area was continued; an assessment of the industrial minerals potential of the Sudbury area was begun; participation in geologic hazard lands studies was continued in several parts of the province and several commodity analysis studies were begun.

Geoservices

The Geoservices Section provides a support and service function to Ministry geoscientists, management and public.

Geoscience Information Office

The Office organizes and conducts classes of instruction in geology and mineral exploration, answers geological inquiries from the public, and prepares or assists in the production of popular brochures and guidebooks on the geology of Ontario. During the year, education courses included one basic course, two field courses and several field trips. During the summer, half-day geological talks were arranged for most of the Junior Ranger camps.

"The Geological Branch – Its Role in Our Continuing Prosperity" was issued during the year, and the "Rocks and Minerals Information" booklet was revised.

Scientific Review Office

The Office is responsible for the scientific review, editing and publication of all geoscience reports and preliminary maps. The following were printed during the year:

Geoscience Reports, Geoscience Studies	18
Open File Reports	18
Miscellaneous Papers, Miscellaneous Publications	8
Coloured Maps (cartography by Lands and Waters)	32
Preliminary Maps	305

In addition, 31 reports were in progress and under review, and several hundred illustrations were produced by the drafting unit.

Geoscience Data Centre

The Centre performs tasks related to the gathering, research, compilation and computer processing of geoscience data on mineral deposits of Ontario; indexes publications released by the Ontario Geological Survey and reports submitted for assessment work credit; and within its means investigates and improves upon existing data handling systems.

The Centre completed the update and compilation of 512 Source Records for uranium deposits in Ontario. Two computer-based files were created; one contained geoscience data on 1,074 iron deposits and the other covered data on 982 diamond drill holes completed between 1953 and 1975 to explore the uranium-bearing formations in the Elliot Lake area.

During the year, 790 OGS publications, assessment reports and MEAP reports were indexed for computerized storage in the Ontario Index to Geoscience Data.

Assessment Files Research Office maintains for public use a library containing all technical surveys filed for assessment credit. During the year it filed prospectuses, summary reports from the Ontario Securities Commission, and technical data filed in accordance with the Mineral Exploration Assistance Program.

A feasibility study was undertaken on the implementation of an integrated province-wide microfilm and computerized index system for exploration reports submitted by the mining industry.

Geoscience Laboratories

Geoscience Laboratories provide scientific support and technical services for the programs of the Mineral Resources Group. The service includes assistance to the private sector as well as in-house activities. The Toronto and Cobalt laboratories charge fees for outside work but avoid competition with private laboratories.

Temiskaming Testing Laboratory (Cobalt) – The primary functions of the laboratory are the bulk sampling of silver-cobalt ores and concentrates and the determination of silver, cobalt, nickel and copper so that the market value of mine shipments can be established. While silver ores are given priority, the mill is available for the processing of other rocks, ores, and concentrates.

The bulk sampling function consists of car sampling and machine sampling of ores and concentrates, mainly from mines in the Cobalt area. Cash revenue was low during the year because of the small volume of shipments from the mines and the emphasis on low-grade concentrates.

Analytical Laboratory (Toronto) – The laboratory scientists conduct research on analytical techniques and provide a wide variety of analyses on geological materials. Their work ranges from the determination of major constituents of rocks and ores to the geochemical analysis of soil, rock, water and vegetation samples for trace elements. The Laboratory is equipped with up-to-date analytical equipment including a computerized multi-channel x-ray spectrometer, emission spectrographs and absorption apparatus.

With the expansion of instrumental analysis, a quality control program has been established to maintain adequate standards of accuracy and precision; twelve controls, representing a range of rock types, have been prepared to date.

The laboratory continued to support reference material projects sponsored by CANMET and Canada Centre for Inland Waters. Data for four materials were submitted.

Methods development and research continued to be important for meeting program needs. Semi-automated methods for antimony and arsenic were established and x-ray fluorescence methods for thorium, cesium and cerium were improved.

Mineral Sciences Laboratory (Toronto) conducts research with respect to mineralogy, petrology and physical testing. Examinations, consultations and projects for the public are significant. The laboratory contributes in various ways to the rock analysis program, mainly through the maintenance of the OGS rock and thin section library and the development and implementation of a computerized norm program for all analyzed samples. This is useful to geologists for the interpretation of data.

The laboratory assisted with analytical, mineralogical and physical testing in the following geological projects: Study of Ontario Peat Bogs, Mineral Exploration Incentives Program for Pembroke – Renfrew Region, Synoptic Studies for Volcanic Rocks, Alkali Rocks and Carbonatites of Ontario, A Geotechnical Study at Various Suites of Sensitive Clays, and Marbles of Ontario.

Technical Services Office arranges for the requisitioning, maintenance and cataloguing of all field equipment, vehicles, furniture and scientific instruments for the Ontario Geological Survey.

Outdoor Recreation Group

The Outdoor Recreation Group was established on February 1, 1978, with the amalgamation of the Division of Fish and Wildlife and the Division of Parks. The five constituent branches were reduced to three as of April 1, 1978. Park Management and Park Planning were combined to form Provincial Parks Branch. Fish and Wildlife Research Branch ceased to function as a separate branch and its constituent elements were attached to Fisheries Branch and Wildlife Branch.

Fisheries Branch

The objective of Fisheries Branch is to maintain and enhance the fish populations of Ontario as a stable base upon which recreational and economic benefits are provided to the people of this Province.

Fish production potentials of many Ontario lakes have been seriously reduced and several fish populations have lost their stability during recent decades. General stresses acting on fish populations are excessive exploitation, degradation of habitat and water quality (by land and water based developments and by nutrients and/or contaminants), and side effects of newly introduced or invading species such as smelt and sea lamprey.

Recovery of the former fish production potential of Ontario waters requires a more intensive degree of fisheries management effort throughout the province. This will include continuing international participation in the Great Lakes Fishery Commission program and an increased fisheries role in water-quality management programs co-ordinated by the International Joint Commission.

The strategy recommended by the federal-provincial Strategic Planning for Ontario Fisheries (SPOF) study was presented to Cabinet during the fiscal year and received approval in principle. This study has identified problems affecting Ontario's fish resource and has recommended an expanded fisheries program complete with new policies, more staff and additional funding to rectify the problems. During the year, several working groups developed new policies in areas identified by SPOF.

Commercial Fishery

In 1977 the landings of many species remained comparable to those of previous years with some exceptions. In terms of value, yellow perch in Lake Erie represented 62 per cent of the 1977 harvest. In terms of weight, the Lake Erie fishery supplied 45 per cent of the commercial harvest.

Landings of sunfish in Lake Ontario and southern inland waters declined by 27 per cent from 1976 while catches of white perch declined 59 per cent.

In Lake Erie, the smelt harvest increased 34 per cent and yellow perch landings increased 83 per cent. In Lake Huron, however, the yellow perch harvest decreased 43 per cent in weight.

The total commercial fish harvest in Ontario waters was 51.8 million pounds, substantially larger than the 45.1 million pounds netted in 1976. Strengthening prices for most fish species raised ex-vessel values to $14.5 million from $12.5 million in 1976. Baitfish catches were relatively constant but fishermen had higher financial returns due to increased prices.

Employment in both fisheries was up slightly from the estimated 5,500 persons reported in 1976. A reported $24.0 million was invested in the food-fishery.

The Freight Equalization Program continued, under a revised rate schedule, to assist fishermen in remote areas of the Province to meet high freight costs. Harvests of otherwise under-used fish species in the more accessible fisheries in northwestern Ontario were also stimulated.

Under the federal-provincial Fisheries Industrial Program, a number of projects were carried out in 1977.

An estimated 967,000 migrant eels passed into Lake Ontario via the eel ladder at the Moses-Saunders Dam. Approximately 10,000 upstream migrants were tagged to assess the long-term value of this access. It has been recommended that the ladder be made permanent and larger to accommodate more fish.

Demonstrations of techniques and equipment for bait-fishermen were continued. In Napanee District, stocks of bait-fish were located and assessed and more efficient harvesting methods were developed.

Canadian paired trawling was initiated in Lake Erie to explore methods of harvesting coarse fish.

A large monofilament-mesh trap net was constructed in Thunder Bay to harvest whitefish. The net will be used for further exploration and demonstration of effective impounding gear for lakes in northwestern Ontario.

Fish Culture

The Fish Culture Section is responsible for planning and co-ordinating production of eggs and young fish to be stocked in selected Ontario waters. In 1977, approximately 7.7 million eggs and 8.3 million fish were stocked. Five per cent of the eggs and 31 per cent of the fish were released into the Great Lakes and their tributaries. The remaining eggs and fish were stocked in more than 1,100 inland waters. Yellow pickerel eggs, representing 94 per cent of all eggs planted, were stocked in seven water bodies.

Approximately 76 per cent of all fish stocked were salmonids, including brook trout (23%), lake trout (27%), rainbow trout (13%), splake (11%), and coho salmon (2%). The remainder were maskinonge (12%), yellow pickerel (8%), smallmouth bass (3%), and largemouth bass (1%).

Development of the fish culture data base was completed and programs for loading and calculating these data became operational. A backlog of hatchery data from 1973-6 was loaded in the data base.

Renovation of the main hatchery at Dorion began in 1977 with completion expected in 1978. Planning for the renovation of the Hills Lake Hatchery began and it is hoped that construction will begin in 1979. Plans for the construction of the proposed new Lennox fish hatchery in southeastern Ontario were again deferred because of monetary constraints.

The disease monitoring program received increased emphasis in 1977. Headwater supplies and hatcheries at Chatsworth and North Bay were treated with a chlorine compound (HTH) to eradicate disease organisms.

An agreement between the Ministry and the University of Guelph permitted the continuation of disease diagnostic services and fish nutrition studies.

Special projects initiated in 1977 included studies on the feasibility of culturing whitefish for the rehabilitation of Lake Simcoe and on techniques for the advanced culture of yellow pickerel.

Fish Habitat (Environmental) Dynamics

The loss of significant portions of fish habitat continues to be a problem. Notwithstanding normal changes during each season, society's activities will constantly stress

and degrade fish populations through destruction of habitat. The rehabilitation of lost or degraded habitat is a slow process during which time fish production is very low.

The study at Nanticoke continued. By a special arrangement with Ontario Hydro, Stelco and Texaco, the Ministry has undertaken a long-term study of the effects of industrialization on fish and related habitat in the Long Point Bay area of Lake Erie.

The pilot study to rehabilitate degraded fish habitat in Wilmot Creek continued. In-stream and stream-bank alterations have been designed to restore this former Atlantic salmon stream and to increase trout production. Intensive monitoring of water quality and related aquatic life will help determine the most cost-effective way of reclaiming other streams in Ontario. Private landowners are being interviewed for their interest in working with the Ministry under agreements for rehabilitation of fish habitat.

Dams, many in disrepair and abandoned, continue to block migrating fish and limit the production of trout to a level much below the potential. Some dams are bypassed by fishways. More than 6,000 trout ascended fishways in 1977 to spawn in the cold, clear upper reaches of Great Lakes streams. Since fishways are poor substitutes for unimpeded passage, the removal of dams and other obstacles is under consideration.

Where costs prohibit the construction of a fishway or purchase and removal of a dam, the trucking of fish past barriers is a reasonable short-term substitute. In 1977, adult rainbow trout were transported above two dams on Bowmanville Creek to locations where they spawned successfully. Similar experiments will continue in 1978. In cooperation with the Ganaraska Conservation Authority, the Ministry is testing a spawning channel on Cobourg Creek and will release adult rainbow trout into the structure in 1978.

The inventory of aquatic habitat in lakes and streams surveyed 681 lakes (300,000 hectares) and 300 km of streams in 1977. To date, a total of 560 fishing maps has been prepared for the public.

Some fish species in certain waters are contaminated with heavy metals, pesticides and other hazardous chemicals. In 1977, approximately 12,000 fish from 270 waters were collected for testing by the Ministry of Environment. This co-operative program will continue in 1978. The objectives include comprehensive reviews of contaminant levels in fish by water body and sufficient advice from health authorities to assist anglers in deciding how much fish to eat at any one time.

Fisheries Policy Development

The Fisheries Policy Development Section is responsible for establishing a planning framework for Ontario fisheries resources and for developing policies to manage these resources.

Input is provided to Ministry strategic land use plans, municipal plans, lakeshore development studies and other planning activities within and outside the Ministry. This input ensures that fisheries concerns are considered and adequately discussed at the planning stage.

The methodology for calculating potential fish yields from lakes was further refined. A publication describing this work is expected in 1978.

Data analyses from the joint federal-provincial angler survey of residents and non-residents who fished in Ontario in 1975 continued. Publication of the results are expected in 1978.

Ontario has more than 500,000 lakes larger than 2.5 acres (one hectare) with a total area of 24,961,000 acres, according to estimates presented in Counts and Measurements of Ontario Lakes, published during the fiscal year.

Administration of the boating restriction regulation program continued. Three regulations were submitted to the federal government for approval and passed by legislation under the Canada Shipping Act.

Liaison between Ontario and the federal government for small craft harbour development continued via the Inter-Ministerial Committee on Great Lakes Access.

Fisheries Research

An objective of Fisheries Research Section is to undertake or arrange investigations to provide the basic understanding needed for optimum, scientific management of Ontario's fish resources. To this end the Section carries out relevant research and publishes its results in internationally recognized scientific journals, and also makes its specialized expertise available to all levels of the Ministry.

Much of the research is aimed at improving our ability to predict the impact of man's growing use of waters and fish communities. Staff have become increasingly involved in multi-disciplinary co-operative work with scientists from sister ministries, the federal government, international commissions and universities. Two excellent examples are Project Quinte and the Lakeshore Capacity Study.

The Project Quinte study, which involves scientists from both the federal and provincial Environment ministries and Queen's and Guelph Universities as well as the Ministry's Lake Ontario research staff, reached an important milestone in 1977. Removal of 80 per cent of the phosphorus from local sewage is now an accomplished fact and the scientific team has completed the comprehensive studies which documented the pre-treatment conditions in the bay. Publication of these baseline studies is expected later this year in a special volume of the Journal of the Fisheries Research Board of Canada. Improvements in water quality are already evident and work is now on hand to follow the response of the aquatic community and to direct it, so far as possible, towards restoration of attractive and profitable fisheries.

As its name implies, the Lakeshore Capacity Study is intended to provide a reliable factual basis for judging the degree of development which can be allowed around recreational lakes without seriously adverse effects. The fisheries component is continuing its evaluation of the relationship between the fish catch and fishing pressure and also between the fish catch and the numbers and kinds of people using the lake—cottagers, day-users, residents and non-residents. It has also developed and applied methods to identify and map important areas in these lakes, which are critical to maintaining fish production, and evaluate the impacts on them of such development activities as dredging, filling, weed removal, dock building, or boating. Throughout, close links have been maintained with related Ministry of the Environment and Ministry of Housing programs.

Research on the genetics, physiology, reproduction, growth and survival of hybrid trout is being continued under both laboratory and field conditions. In particular, comparative tests of the performance of lake trout and a backcross between highly selected fifth-generation splake and the lake trout have been implemented in Lake Huron.

Excellent progress has been made in the identification of separate stocks of wild Ontario brook, lake and rainbow trout on the basis of their genetic characteristics. Three distinct stocks of each species were located in 1977 and shown to have substantially different heritable biochemical characteristics. Because these characteristics are inherited, they serve as natural tags and will allow fishery managers to follow very exactly the contribution made by hatchery plantings derived from these stocks, not only in the first but also in subsequent generations. There is every reason to expect that further identifiable stocks will be discovered as the survey proceeds and that it will soon be feasible to match stocks to the needs of the waters to be planted in ways not now possible.

At the four Great Lakes Research Stations and at the Harkness Laboratory in Algonquin Park, numerous investigations are being conducted into the roles of various environmental factors and fishing pressure on the production of game and commercial fishes. For example, much attention

is being given to the importance of competition from perch, predation by loons, and the particular strain of brook trout planted (wild or domestic) as manageable factors determining the success of brook trout fisheries in Algonquin Park and beyond.

Special efforts are being made to analyse backlogs of information by the elaboration of machine data processing facilities at Maple and at the field research stations. Such developments are furthest advanced at the Lake Huron station where data are now available for analysis by machine methods essentially the same day collected, and substantial progress has been made in making the 30 years of past data similarly accessible. The experience acquired at this unit is now being applied by other research units, especially the Lake Ontario and Harkness Laboratory units, to make their extensive data collections more readily available and useful.

In collecting data, fisheries scientists often obtain information of immediate use to local district management staff and they may advise local management staff. They also act as technical representatives of the Ministry on interministerial and federal-provincial committees, the International Joint Commission for Boundary Waters and the Great Lakes Fishery Commission.

Fisheries Services

Fisheries Services Section is responsible for developing and carrying out programs relating to data processing, information, training and extension, the preparation of legislation, and the printing of fisheries regulations.

Sales of all non-resident angling licences increased in 1977. Seasonal and three-day licence sales rose 1.1 and 1.8 per cent, respectively. Organized camp licences decreased from 5,663 in 1976 to 5,611, a drop of 0.9 per cent. The sale of non-resident smelt licences (which includes bow-and-arrow fishing for carp) increased substantially by 12.2 per cent.

The Canadian resident angling licence for non-residents in Ontario continued in popularity and sales rose by 1.3 per cent in 1977.

The Ontario Fisheries Information System (OFIS) has been developed to the extent that commercial fish harvest data, hatchery production data and lake inventory data are now entered regularly.

The task of developing OFIS is a major one which will continue for some time. Based on this year's experience, a set of proposals, intended to make the system more useful to a greater number of people, has been developed and is now under study.

Population Dynamics

The Population Dynamics Section provides advice to field staff involved in fish population studies, acts as a general repository and reviewer of creel census reports, and orders and controls the distribution of fish tags in the province. The Section is represented on the Lake Superior, Lake Huron, Lake Simcoe and Algonquin fisheries management committees.

Data entry on cassette tapes of a geographical atlas of the 2,000 lake trout waters in Ontario was completed. A fisheries training session for approximately 100 staff, to bridge the knowledge gap between the SCOL training session (1974) and a forthcoming Percis training session, was held in 1977.

A great deal of work (mapping and data analyses) was accomplished on a resource atlas of walleye lakes in Ontario. A draft of a chapter on lake charr (senior author from Fisheries Research) for a book, entitled *Charrs of the genus Salvelinus,* was submitted for review.

Provincial Parks Branch

The number of campers using Ontario provincial parks in 1977 was 1,371,039 and the total visitation was 10,431,166.

The number of provincial parks in operation increased from 122 to 126 with the opening of Murphys Point, a 430-hectare recreational park situated on Rideau Lake approximately 12 miles southwest of Perth, and with the establishment of three nature reserves—East Sister Island, Ojibway Prairie and Peter's Woods.

Improvements, particularly to water, sewage, roads and electrical distribution systems, continued to be priority projects in provincial parks.

Visitor Services

Interpretation Program

A clear improvement in public service began with implementation of the new regional visitor services plans.

By concentrating interpretive programming in a small number of selected parks, a significant increase in delivery quality was achieved with no loss in total attendance. At the same time, a major effort was made to provide self-use facilities, such as self-guided interpretive trails, wayside displays and educational leaflets, in parks lacking organized programs. Both these strategies were well received and will be continued.

Winter Parks

During the winter of 1977-8, only Sibbald Point on Lake Simcoe provided over-night use. Winter facilities at Sibbald included snowplowed roads and campsites, washrooms, drinking water, electricity and fuelwood. Regular fees were charged.

Other parks, such as Arrowhead near Huntsville, Pinery on Lake Huron, Rondeau on Lake Erie and Bronte Creek near Burlington were open for winter day-use. Facilities included groomed cross-country ski trails and snowmobile trails and provided for outdoor skating, snowshoeing, ice fishing and tobogganing. Regular fees were charged.

Bronte Creek and Wasaga Beach Provincial Parks offered skating on artificial ice for the first time. Cross-country skiing, snowmobiling and snowshoeing were popular activities in both parks.

Remi Lake, near Kapuskasing, continued to operate a ski tow and offer cross-country skiing and tobogganing.

Many other provincial parks were used informally for activities such as snowshoeing, cross-country skiing, tobogganing and viewing.

Winter Trails

Through the winter trails recreation program, $500,000 was made available in the form of grants to trail clubs and Conservation Authorities to assist in the grooming and maintenance of more than 8,000 miles of snowmobile and cross-country ski trails throughout the province.

The Ministry maintained 1,000 miles of snowmobile trails and cross-country ski trails on Crown land and many provincial parks also offered similar facilities.

Interior Camping, Canoe Routes

During 1977, 102,000 people entered Algonquin, Quetico, Bon Echo and Killarney Provincial Parks for interior canoe camping and hiking.

An advance reservation system for canoe camping was successfully introduced at Quetico in addition to a can and

bottle ban which has significantly reduced litter problems in the interior.

In total, the Ministry managed more than 15,000 miles of canoe routes in provincial parks and on Crown land.

Access Points

Approximately 1,400 access points with parking areas and boat launch ramps were maintained to provide boaters with access to lakes and rivers.

Provincial Parks Policy and Park Classification

A proposed policy for the provincial park system was finalized and reviewed with the Provincial Parks Council and other ministries of the government. The policy details a goal and a set of objectives for provincial parks, the principles by which the Province's parks will be planned and managed, and a revised park classification scheme. Six distinct park classes are proposed: natural environment, wilderness, recreation, nature reserve, waterway, and historical. The proposed policy was scheduled for review by Cabinet in the spring of 1978.

Detailed planning and management policies for each proposed park class will be released subsequent to approval of the policy.

Park User Survey

The park user survey, initiated in 1974, continued during the 1977 season with surveys of day visitors and campers in 17 parks. The survey provides information vital to the planning and management of the parks. Parks are covered on a rotation basis so that most parks will be surveyed once every five years.

Waterways

A waterway identification and evaluation exercise has produced an inventory of the Province's most promising rivers for waterway designation. The highest rated rivers are being studied in greater detail.

Nature Reserves

Draft frameworks for the systematic identification of provincially significant natural features and environments have been completed. These frameworks will be employed to identify and evaluate potential nature reserves.

The Ojibway Prairie Provincial Nature Reserve at Windsor (65 hectares) was placed into regulation, increasing the number of nature reserves to 11. Land acquisition for a 540-hectare nature reserve on Manitoulin Island was completed with the assistance of the Nature Conservancy of Canada and the Federation of Ontario Naturalists.

Regional Systems Planning

Studies were initiated in the eight administrative regions to appraise the implications of the proposed provincial park policy.

Evaluations of provincial parks and park reserves were made to determine the ability of existing park resources to meet the proposed objectives and targets related to protection, recreation, heritage appreciation and tourism.

Master Plans

In response to requests from many interested individuals and organizations concerning the official status of master plans for provincial parks, an amendment was made to The Provincial Parks Act in June, 1976. The term "master plan" is now defined in the Act. The amendment also authorizes the Minister of Natural Resources to prepare and approve a master plan for any existing or proposed provincial park as well as carry out periodic reviews and make necessary alterations to an approved master plan.

To date, 18 master plans have been approved by the Minister, 16 are pending final review and approval, and 30 others range between initial and advanced stages of preparation. Thus approximately half the provincial parks have master plans either completed or under way.

Public participation programs continued for several planning projects, such as Lake Superior and Polar Bear, to encourage maximum public involvement in the decision making process.

Five-year reviews, involving public participation programs, were carried out on The Pinery and Bronte Creek Provincial Parks master plans.

Land Aquisition

Work continued on the evaluation of future parkland with emphasis on increased recreational facilities for southern Ontario residents. During the year, 546 ha were acquired for parks purposes.

Site Plans, Facility Plans

During the year, a total of 563 detailed site plans were produced. These included campground layout, facility siting, planting, grading and drainage work, graphic design assistance and site surveys, assistance for planning and master plans, and assistance to other government agencies.

Facility and engineering plans, including specifications for tendering, were completed for 196 projects. These included new facility concepts, water and sewage systems, completed building plans, electrical distribution systems and road paving. Planning and other assistance was provided for other government agencies.

Highlights work during the year included corridor improvement studies in Algonquin and Lake Superior Parks; upgrading and improvement to park facilities, particularly water, sewage and electrical systems; development work at Awenda, Bronte, Murphys Point and Silent Lake Provincial Parks; and presentation of a park planning and design course for the staff of Saskatchewan provincial parks.

Ontario Provincial Parks Council

The Ontario Provincial Parks Council was established in October, 1974, to advise the Minister on parks-related issues. The Council's second annual report was submitted to the Minister in March, 1977, with recommendations on a variety of issues including park policy, revenue generation, privatization, park regulations and Algonquin Park.

The Council held public hearings during the year in Toronto, Niagara, Sault Ste. Marie, Wasaga, Quetico and Pembroke and examined a number of subjects including the role of Nature Reserves, rowdyism, park planning and legislation. Membership on the Council was reduced from 19 to 10 members. Dr. George Priddle, from the University of Waterloo, continued to serve as Chairman of the Council.

Ontario Trails Council

Under the chairmanship of William E. Coates, the Ontario Trails Council completed its work in the fall of 1977 and submitted its final report to the Minister of Natural Resources. In two years the Council had conducted 15 public meetings in Ontario centres and received 352 briefs. Its final report presented 90 recommendations grouped in 14 topic areas as follows: civil liability, Ontario trails program, legislation, management responsibilities, planning, human resources, land resources, trail stability, funding, user information, trail mapping, safety, compatability and special trail requirements.

Wildlife Branch

The Branch objective is to manage, enhance and interpret wildlife populations and habitats to provide optimum wildlife-based recreation opportunities for the residents of Ontario as well as a continuous contribution to tourism and its related industries. Much effort is directed to the maintenance and improvement of wildlife habitat as it is habitat which determines the potential in wildlife numbers.

Moose Management

The moose population appears to be stabilizing at about 80,000 animals, south of the 11th base line. Strategies to reduce the harvest of moose by adjusting the hunting seasons have not yet allowed herds to rebuild. The development and evaluation of new harvest strategies are now under way, including that of hunter control for implementation when appropriate.

Standards and guidelines for moose habitat management have been completed. The management of moose habitat has been undertaken by wildlife and forest managers. An audio-visual slide show, entitled "Monarch of the North," is now available for the instruction of both staff and public on moose and moose management.

Deer and Bear Management

The development of policy options for deer management is under way.

The number of deer in the forested areas of the northwest fluctuates with winter conditions, and that in the forested areas south of the French and Mattawa Rivers is declining as a result of decreasing habitat quality and overharvest. Habitat management, concentrated on increasing winter and summer food supplies and winter shelter areas, is required for an abundance of deer. A change in the strategy of harvesting deer is being considered. In the agricultural south, the number of deer is holding or increasing and methods are sought to allow the harvest of deer.

Black bear numbers, though difficult to assess, are believed to be constant. Nuisance bear are trapped and released elsewhere whenever possible, or destroyed if necessary. Hunters take about 4,000 bears per year, and the number of bear hunters is increasing.

Upland Game Management

Development of population inventories for selected small game species is under way. A crowing cock survey for pheasant was developed and implemented in co-operation with field staff.

A comprehensive reassessment of raccoon hunting and trapping seasons was initiated and is in progress.

Most populations of small game species appeared to be healthy. Hungarian partridge, pheasant, woodcock, European hare, cottontail rabbit and snowshoe hare are expected to be abundant enough in the upcoming hunting season. Ruffed grouse continued to remain at relatively high population levels in most areas. Severe winters have resulted in a high mortality of bobwhite, however.

Waterfowl Management

A program to produce a wild breeding population of Canada geese in southern Ontario, under way since 1968, has been successful and produced an estimated 20,000 of these birds as breeders or potential breeders.

Snow goose breeding success in the Northwest Territories is expected to be poor in 1978 due to persistent snow cover during the nesting season. Fall populations of the duck species that breed in the Canadian prairie are predicted to be about average. Generally, populations of Arctic-breeding ducks may be somewhat reduced.

Non-Game Management

This program includes work on threatened and endangered species, non-game species and the interpretation of wildlife resources.

Nine species were designated as endangered during 1977, bringing to 13 the number of species now officially designated as endangered under The Endangered Species Act.

Studies undertaken during 1977 included work on the bald eagle, piping plover, white pelican, black rat snake, Kirtland's warbler and the West Virginia white butterfly. The initial attempt to reintroduce peregrine falcons at former eyrie sites was undertaken.

Wildlife interpretation weekends were held at Long Point, Presqu'ile, Hawk Cliff (near St. Thomas), and at the Toronto waterfront. Major articles were prepared on the peregrine falcon work and on the entire endangered species program. Exhibits on the non-game program were completed and work commenced on the interpretation facilities at the Upper Canada Migratory Bird Sanctuary near Cornwall.

Wildlife Management Areas

Thirty-two Provincial Wildlife Areas are maintained in southern Ontario to provide wildlife-based recreation on public land and similar recreation is available on ten Wildlife Extension Landowner Agreement Areas established by agreements with landowners. Habitat is managed to produce wildlife for viewing, hunting and the maintenance of wildlife populations.

Wildlife Services

Ontario's Conservation Officers are responsible for the enforcement of The Game and Fish Act and various other Acts administered by the Ministry of Natural Resources. They are also appointed as Fishery Officers under the Fisheries Act of Canada and as Game Officers under the Migratory Birds Convention Act of Canada, which authorizes them to enforce these Acts and regulations thereunder on behalf of the Government of Canada.

During the past year, Conservation Officers laid a total of 8,142 informations under these Acts, resulting in 7,166 convictions. A total of 6,376 articles and game were seized from 6,096 persons. Of 20,067 alleged violators, 41 per cent were charged and 59 per cent were warned.

Planning

Many kinds of plans, including recreational, forestry, mining, housing and municipal development plans, have been reviewed to ensure that wildlife interests are an integral part of planning.

A cost-benefit study of provincial wildlife areas was undertaken as a preliminary part of a systems planning process for these areas. A study of the implications of the use of native birds of prey in falconry was begun. A proposal for tax reductions for owners of wetlands and habitats of endangered species was provided at the request of TEIGA for use in the proposed revision of property taxation.

Broad priorities were established for protection of major migratory bird habitats as part of a task undertaken by eastern provinces and the federal government. The mapping of important migratory bird habitats in southern Ontario was initiated.

Staff continued to participate in studies of proposed large-scale developments which had the potential of affecting wildlife or wildlife habitat.

Wildlife Surveys and Records

This office files hunting and non-resident angling licences. Statistics on hunting, including participation rates,

hunter success and harvest, and socio-economic characteristics of participants, are obtained through mailed questionnaires. This information supplements data obtained in the field and forms the basis for wildlife management and recreation planning.

Furbearer Management

The 1976-7 trapping season saw an increase in the harvests of most species of furbearers and in the average prices received by trappers. The beaver harvest increased by almost 27,000 pelts to 153,393 with an average price of $26.41; 18,822 minks were harvested, their pelts averaging $16.00.

The most spectacular increase in the harvest was recorded for marten which doubled from the previous season to 40,363 pelts at an average price of $17.67. The muskrat harvest increased by 100,000 pelts to 532,749 at an average price of $5.11. The raccoon harvest continued to increase and amounted to 57,327 pelts with an average price of $21.39. Hunters sold the pelts of an additional 28,732 raccoons.

Altogether, 13,775 trappers sold pelts valued at more than $11 million.

Increasing numbers of trappers are attending trapping workshop courses given by the Ministry and the Ontario Trappers Association. A greater emphasis is being placed on longer workshops of several evenings in duration, and work has progressed towards standardizing course outlines.

Hunter Safety Training

The Hunter Safety Training Program was transferred from Information Services Branch to Wildlife Branch in 1977. The expansion of the program was continued in the areas of hunting ethics, wildlife management, wildlife identification and hunter-landowner relations.

During the year 1,008 certified hunter safety instructions trained 40,000 hunters, and the Ministry's hunting licence examiners conducted 36,000 hunting licence examinations. The Ministry's courses on Method of Instruction and Range Procedure Training were attended by 100 instructors.

Wildlife Research

Research seeks to fill out our knowledge gaps by investigations of population dynamics, behaviour, physiology, reproduction, diseases and parasites, and interactions between selected species and their habitats.

Investigations of mineral nutrition of moose suggested strong seeking for sodium, and possibly other elements, at natural mineral licks, and for iron and other substances contained in aquatic plants. Mathematical analysis of moose kill data yield a new and very useful means of estimating the hunting mortality incurred by a population.

Studies of the ecology of black bears continued at a high level. More than 50 radio-marked bears were contacted daily throughout the summer of 1977 to obtain valuable information on habitat use. Of five orphan cubs observed, four survived the summer, hibernated successfully, and emerged from dens in 1978.

Investigation of vector dispersal, part of the rabies research program, continued to provide interesting observations of short- and long-distance movements of red foxes and coyotes. The search continued for a suitable rabies vaccine to use in baits for large-scale field distribution.

Other studies included behavior of moose and deer, use of nest boxes by goldeneye and other ducks in northern Ontario, parasites and diseases of black bears, and numbers and reproductive success of polar bears. Publications on the polar bear studies and on long-term deer studies are in preparation.

Resource Development (Native People)

The resource development programs assist the native Indian people of Ontario in the use of renewable natural resources for their economic benefit. The following projects were carried out during the year under the Federal-Provincial Resource Development Agreement.

Fur. This program provides for the placement of Indian trappers on vacant trapline areas. Aerial surveys are conducted and maps showing live beaver colonies are supplied to the trappers. Transportation of supplies, equipment and furs is also provided.

Commercial Fish. Administrative and operational assistance is provided to native people in the Northwestern Region in their commercial fisheries activities.

Sport Fish. Lake surveys were conducted on seven lakes on the Garden River Reserve to determine their potential for sport fishing. A lake trout and brook trout management proposal was prepared for the development of a sport fishery in these waters.

Tourism. Six goose hunting camps were operated during 1977 by the Indian people along the James Bay and Hudson Bay coast. Three camps were operated solely by native people while three were provided with assistance and supervision by Ministry staff.

Hide Collection. In 1977, successful hunters provided 10,000 moose and deer hides for the native people of Ontario. The continuing success of this program is due to advertisements and hunter contacts made over the years. Presently, there are 4,000 native people involved in the craft program. It contributes significantly to their economy through the sale of handicrafts.

Timber. Assistance was provided to native people in the operation of various timber and lumbering operations, reforestation and regeneration programs. Complete timber management plans were developed for some reserve areas.

Planning. Representatives of Grand Council Treaty Areas #3, #9, Union of Ontario Indians and CORAID attend the Resource Development Committee meetings and assist in planning and determining program priorities. Indian Band Councils are contacted in regard to programs most beneficial to their needs.

Game Management. Studies to determine deer populations, mortality rates and range potential were conducted on the Wikwemikong Reserve on Manitoulin Island at the request of the Band Council. The objective of this program is to provide guidance to the band in the management of deer on the Reserve land. (Last year for project).

Lands and Waters Group

The Lands and Waters Group was established on December 1, 1977, with the addition of two branches to the former Division of Lands which had three constituent branches: Lands Administration, Land Use Co-ordination, and Surveys and Mapping. The two new branches are Conservation Authorities, and Engineering Services which was previously within the former Field Services Division.

Lands Administration Branch

Crown lands within the Province, including mining lands, are administered by the Branch. Its responsibilities include acquisition of private lands where necessary for Ministry programs.

Land Aquisition

The Land Acquisition Section is responsible for purchasing private lands required for various Ministry programs such as public recreation and wildlife management. It provides assistance in setting acquisition priorities, overseas and approves each purchase, and maintains a computerized inventory of all property acquired. Newly acquired lands are managed on an interim basis to assure optimum benefits until they are incorporated into Ministry programs. More than 625,000 acres have been acquired since the Section's formation in 1962 – 12,342 acres in the past year.

Mining Lands

Under The Mining Act, the Mining Lands Section is authorized to manage Crown mining lands as follows:

(a) Ruling on mining leases and exploratory licences of occupation (large tracts of land where normal claim staking is not feasible);
(b) Issuing permits for sand and gravel removal;
(c) Setting policy, formulation and interpretation of statutes;
(d) Auditing all mining claims recorded in recording offices;
(e) Auditing all quarry permits issued in recording offices;
(f) Assessing all geophysical, geological and other technical survey reports submitted for assessment work, and
(g) Withdrawing Crown lands from any form of disposition.

Under The Beach Protection Act the Section licenses the removal of sand or gravel from beaches, banks or waters of all lakes and streams and regularly monitors such operations. These licences cover removals by private individuals as well as large commercial extractions which provide considerable revenue in the form of royalties. Liaison with the Ministry of the Environment and field staff specialists ensures that erosion or significant damage to the fish population or local ecology is prevented. Municipalities operating for municipal purposes are exempt from Ministry licensing and supervision.

The program of rehabilitating depleted pits and quarries on Crown lands throughout the Province has been temporarily suspended due to monetary constraints.

The most significant event of the year for this Section was the issue of a 21-year mining rights lease, No. 103293, dated February 1, 1978, to Onakawana Development Limited to produce coal and methane gas from 12,699 acres in the District of Cochrane.

Three exploratory licences of occupation were granted as follows: Prospection Limited, 1,300,000 acres, James Bay Lowlands; Hudbay Mining Ltd., 411,000 acres, Cochrane District; and Kerr-Addison Mines, 201,500 acres, Cochrane District. These companies are required to spend more than $2 million collectively on exploratory work during the next three years. The licences cover all minerals except petroleum oil, coal and natural gas.

Public Lands

The Public Lands Section has two primary functions: management of the Province's 222 million acres of Crown land outside provincial parks, and disposition of rights in public lands and water.

Land management includes control of uses and users (75 million "user occasions" per year for recreation alone); the operation of garbage and litter control systems; the control of unauthorized occupations; the overseeing of construction of roads, pipelines, etc., on Crown land; and control of development on private lands in restricted areas.

Land disposition encompasses the granting of rights (ranging from freehold to agreements for use of waters for power generation) to a wide variety of clients – individuals, corporations, other governments, and government agencies. It includes the follow-up administration of transfers, renewals, cancellations, etc., of tenure documents including leases in provincial parks.

The Section co-ordinates land-related training of staff and the provision of information and advice on public lands to the general public.

Section programs are implemented by field office staff. The main office group formulates operational policy, directs field offices through policy and procedure directives, and monitors field performance through periodic field audits.

Starting this year, Crown cottage lots, offered by lease only in recent years, will be made available for purchase by eligible applicants including Canadian corporations. Lessees of existing cottage lots in subdivisions will be allowed to obtain freehold title to their lots.

Titles

The Titles Section prepares and maintains a written registry of the legal documents required for the ultimate disposition of Crown lands. It is responsible for the maintenance of the Ministry filing sytem that is used in conjunction with the registry for the administration of the Crown land base of the Province. A program to computerize the indexes of these land parcels, their survey plans and related file records has begun and the target for completion in 1984.

This Section levies mining acreage tax and carries out procedures necessary to effect forfeiture to the Crown of alienated mining lands when the owners default.

Office of Indian Land Claims

The Office of Indian Land Claims is responsible for researching and responding to Indian land claims and other Indian land problems. It also is responsible for keeping the Ministry (and Government) aware of the possible extent of future land claims and their significance.

The Office develops Ministry positions on these claims and prepares recommendations to Cabinet. It undertakes research for these in consultation with other ministries, the Federal Government, and Indian bands and their associations. On the direction of Cabinet, it negotiates the settlement of valid land claims with the Indian people involved.

Land Use Co-ordination Branch

The Land Use Planning, Land Use Liaison, Special Projects and Plan Review Sections, which comprise the Branch, continued to co-ordinate Ministry planning, assisted other ministries and planning agencies such as municipalities with land-use plans, and maintained a sensitive-areas recording system. The Branch updated environmental assessment procedures for Ministry undertakings and co-ordinated Ministry environmental assessment responsibilities.

Strategic Land Use Plan

Co-ordination of the Regions in the preparation of the Strategic Land Use Plan is a major priority with the Branch. The strategic plan is being done as a three-phase program; phase one is background information, phase two is policy formulation and phase three is the plan. When completed this plan will guide all subsequent, more detailed plans of the Ministry.

Phase one for Northeastern Ontario and for Southern Ontario were finalized and published; however, neither report was released in 1977-8.

Phase two for Northwestern Ontario was published, released and reviewed by the public. A draft of phase three was prepared for Northwestern Ontario.

Land Use Planning

The Branch again worked closely with the Ministry of Treasury, Economics and Intergovernmental Affairs on the Parkway Belt-West Land Use Plan and the Northwestern Ontario Development Strategy, and with Ontario Hydro on transmission-corridor and generating-station locational studies. It also maintained close co-operation with the Ministries of Environment, Industry and Tourism, and Agriculture and Food.

On other government levels, planning assistance was given to such projects as the Central Waterfront Plan under the auspices of Metropolitan Toronto*, Provincial Regional Development Strategies, and the preparation of official plans by several municipalities, among them the reorganized County of Oxford, Renfrew County, Manitoulin Planning Area, and the Sault North Planning Area.

The Ministry continued to prepare local land-use plans. The Lake of the Woods General Land Use Plan was released jointly by the Ministers of Natural Resources and Housing. In addition the Ministry provided substantial input to the Royal Commission on Electric Power Planning and the Niagara Escarpment Plan.

Plan Review Activity

Development proposals from individuals, private concerns, other government agencies and municipalities can have a significant effect on Ministry objectives and programs. It is important to ensure that such proposals are compatible with, and have no seriously adverse impact on, the Ministry's objectives or programs. Proposals originate throughout Ontario but development pressures are most vigorous in the southern regions. In reviewing and commenting on development proposals, the Ministry makes a valuable contribution to the maintenance of a good-quality environment and the continuing productivity of provincial resources.

The number of plans reviewed increased by 15 per cent over the previous year to a total of 7,735. More official plans, official plan amendments, subdivision plans, severance applications and zoning by-laws were reviewed than in previous years.

**This responsibility has now been transferred to the Conservation Authorities Branch.*

Lake Planning

The Ministry's new three-year cottaging initiative, to terminate in 1977-8, has been extended. The program is intended to increase the number of cottage lots provided on Crown land in northern Ontario and determine at what level the program can be maintained.

Comprehensive lake plans were prepared by field staff following guidelines in the Branch's Lake Planning Manual which underwent further revision on the basis of experience gained during the previous two field seasons.

A previous study on rivers and small lakes is being incorporated into a total water-based recreation methodology for District planning purposes.

Environmental Assessment

The Branch continued to develop class environmental assessments for a number of undertakings. The task of continually refining the Ministry's responsibility under The Environmental Assessment Act was also an important part of the Branch activity.

Special Land Use Related Projects

The Branch provided Ministry co-ordination for two new land-use related projects: the Reed Proposal and the Royal Commission on the Northern Environment. It continued to co-ordinate the Ministry's participation in the Lakeshore Capacity Study.

Surveys and Mapping Branch

The Branch functions as a service agency in arranging for various types of surveys to be performed and for a wide variety of maps to be produced for the Ministry, other ministries, governmental agencies and public use. The Branch is made up of seven units as described below.

Mapping Services

During the year, the Unit continued its technical support of those aspects of Government programs requiring mapping expertise and maintained its efforts to co-ordinate the mapping activities of the Ontario Government, its agencies and municipalities.

A formal proposal for a provincial basic mapping policy and program was made, and on July 20, 1977, the Government established the policy that prime responsibility for the basic mapping policy in Ontario should be assigned to the Minister of Natural Resources who should develop basic mapping programs, maintain the integrity of the provincial referencing grid, and negotiate respective responsibilities for basic mapping between levels of government.

This Ministry was directed to chair a study group of the principal map-using ministries to identify current provincial spending levels for base mapping and to outline an implementation plan for the proposed policy. The study group presented its first report to the Management Board of Cabinet by November 15. It recommended that the Province be adequately mapped within 13 years. Negotiations for the funding of the program have commenced.

The Ministry of Northern Affairs, through its regional priority program, agreed to make funds available over three years to provide some very necessary base mapping in Northern Ontario and also to bulk-test the Ontario mapping

program. Using these funds, contracts were let for the analysis and installation of horizontal and vertical control in the Wawa-Sault Ste. Marie-Mattawa-Haileybury block, and also for trial mapping in the Timmins, Opasatika, Cobalt and Hornepayne areas.

Map-standards testing was continued in southern Ontario, with contracts let for mapping in the London-Simcoe area, and in the Niagara Peninsula.

Surveys

Re-survey of township boundaries, carried out by surveyors in private practice under agreement with the Ministry, continued at the same level as in previous years.

The number of cottage lots laid out in plans of subdivision was increased to meet the targets of the cottaging initiative.

Survey service to other Branches and information and Crown survey records were provided as requested.

Control survey installations, under agreement with several municipalities, were carried on and some completed. Negotiations for new agreements are pending.

Drafting Services

The Unit provided general drafting and mapping services and graphics in support of Branch and Ministry programs. It maintained a graphic inventory of timber, minerals, oil, gas, land and other resources.

Cartography

Responsibility for the production and maintenance of Ontario's topographic, territorial and geological map series lies with this Unit. Scientific, recreational and administrative maps for both government and public distribution, plus a variety of brochures and booklets related to resources and recreation programs of the Ministry, were produced during the year.

Manpower and expertise was supplied towards the monitoring of the Ontario Basic Map Series of maps produced by the private sector under contract to the Ministry.

Geographical Referencing

Work continued on the development and testing of thematic application projects using digital technology. A report was prepared on Cartographic Data Structures for Thematic Applications of Automated Cartography. Several experimental digital forest resource maps were produced for analytical purposes. A report, Computerization of land Indexes and the Use of Geocodes in the Ministry of Natural Resources, was prepared and published.

The Interministerial Committee on Geographical Referencing was formed to provide a forum for discussion and exchange of information on geographical referencing activities in the Provincial Government and to develop geographical referencing standards.

The Ministry's horizontal control survey multi-purpose analysis of network observations and reductions computer program (MANOR) became operational.

Development continued on the provincial Horizontal Control Survey Data Bank.

Nomenclature

This Unit is responsible for collection of, research into, and processing of geographical nomenclature and submissions to the Ontario Geographic Names Board for consideration as official names for Ontario government use. The Unit also functions as the Board's secretariat. Board recommendations are submitted to the Minister for approval.

Three new members were appointed to the Board by the Lieutenant-Governor in Council, September 28, 1977, and two former members were reappointed.

The publication, *Naming Ontario: A Guide to the Collection of Geographic Names,* was issued in September, 1977.

The field program was expanded in 1977 and 1978 in response to accelerated federal NTS map production requiring updated geographical nomenclature for 64 new and revised maps and charts covering Thunder Bay, Dryden, Sioux Lookout, Kenora, Atikokan, Ignace and Fort Frances Districts in 1977 and 96 covering nine Districts north of Lake Superior in 1978.

Short-term surveys covered map and chart areas of Owen Sound, North Bay, Wingham, Kincardine, Durham, York, Halton, Peel, St. Catharines, Arnprior and Carleton Place.

The Executive Secretary of the Board attended the Third United Nations Conference on the Standardization of Geographical Names in Athens, August-September, 1977, and presented two papers: *A National Policy for the Bilingual Treatment of Geographical Names on Canadian Maps and Field Collection of Geographical Names in the Province of Ontario, Canada.*

Ontario Centre for Remote Sensing

The Centre conducts projects applying the analysis of aerial photography, other forms of aerial imagery, and satellite imagery to resource management and development. Projects are undertaken at the request of ministries, other Ontario Government agencies, and the private sector.

To complement this function, the Centre also conducts research on the development of new methodologies of remote sensing application and on the practical applicability of new forms of remotely-sensed data. More than 50 research and applications projects were undertaken this year.

The Centre began the completion of the surficial geology and wetlands mapping of Ontario in 1977-8, commencing in the far northwest of the Province. Field sampling was completed for an area of 250,000 km^2, and the preparation of manuscript maps for the area was begun.

Research into the development of two remote sensing methodologies for the assessment of forest regeneration success was continued.

The Centre conducted preliminary testing of a methodology of forest typing by digital analysis of satellite data. Favourable results on the practicality of the method encourage further investigation.

The Centre continued a comprehensive program of forestry-oriented projects, such as research on the aerial forest sampling methodology, detection of forest damage by disease and infestation, and mapping of old and recent forest fire sites.

Numerous projects were undertaken to assess building heat loss by aerial thermography, and to provide instruction and advice on the use of the thermographic methodology. Thermographic coverage was obtained of Lindsay, Peterborough, Stratford, Guelph, Brockville, Kingston, St. Catharines, Windsor, Kapuskasing and Cochrane.

The first presentation on heat loss and insulation performance, as interpreted from thermography, was made to homeowners in the town of Lindsay.

Presentations on the usefulness of remote sensing and on the Centre's new developments were given to Ministry personnel, other ministries, university audiences and representatives of private industry. Advice and assistance in the use of remote sensing imagery and methods of analysis were provided to many hundreds of visitors to the Centre. Scientific papers were delivered at national and international remote sensing conferences.

In 1977-8, the Centre acquired the capability for digital image analysis which will permit the extraction of much finer detail from satellite data and greatly broaden the scope of applicability of spaceborne remote sensing in Ontario.

Engineering Services Branch

The objectives of the Branch are to provide for the control of surface waters and the regulation of improvements; to design and construct water management facilities to prevent flooding and erosion; to provide an engineering and construction support service for Ministry programs; to coordinate resource access construction and maintenance; and to provide a vehicle fleet and equipment management system.

Pre-Engineering and Design

Projects included dams at Wolf Lake, Sideburned Lake, Upper Canada Bird Sanctuary and Barnum House Creek; a fish pass at Thornbury; and docks at Wabigoon Lake and Manitouwadge.

Soils investigations were carried out by consultants for Sideburned Lake, Berry Lake and Hullett Marsh dams, Wabigoon Lake and Manitouwadge docks, and Turtle River Bridge.

Construction

Water control structures were built at Methune Lake, Dryberry Lake and Barnum House Creek. The Port Albert Fish Pass, started the previous year, was completed and a beginning was made on the rehabilitation of Sideburned Lake Dam. The Georgina Island Dock was completed and new docks were built at Wabigoon Lake and at Manitouwadge. Bridges were built at Pickerel River in Parry Sound District and on the Olrig Road in Nipissing in support of the resource access road program. Cannifton Dam, on the Moira River upstream from Belleville, was removed to prevent its possible collapse.

About one and one-half miles of the Goulais River, a few miles north of Sault Ste. Marie, were cleared of floatwood to remove a possible cause of flooding and to allow pleasure boats to navigate the main river channel.

Maintenance of Hydraulic Structures

The Branch provides routine maintenance for some 300 Ministry-owned dams and a variety of navigation aids such as boat transporters, marine railways, rollerways and mechanical portages, as well as channel marker buoys in several lakes in Muskoka.

Major repairs were made to the docks and canoe channel at Port Carling, to dams at Lutterworth and Digby, and to docks at Trout Lake, South Baymouth, Temagami, Little Current and Wade's Landing. Shore protection works at Elk Lake and Parry Sound were repaired. At Rydall Bank, timber piles, which had originally supported a bridge but were only serving to catch debris and cause erosion, were removed and eroded areas were filled. Minor maintenance was carried out on facilities at 68 other locations.

Water Management

The Branch provides for the operation of Ministry-owned dams for recreation, fish and wildlife protection, flood and erosion control, and Ministry service. It also regulates construction of private dams, diversions, channelization and other water control structures under the provisions of The Lakes and Rivers Improvement Act.

Two hundred and twenty-one location approvals were granted for dams (48 per cent of the total), diversions and channelization (36 per cent), and other water control projects (16 per cent) by district offices, an increase of 13 per cent over last year. Twenty-three applications were refused and five inquiries held under the Act. One Minister's order was issued for removal of an unauthorized dam.

Ninety-two plan and specification approvals were issued for dams (53 per cent of total), diversions and channelization (37 per cent), and other water control works (10 per cent) by regional offices.

Approximately 650 investigations were made of water regulation problems involving construction, operation and maintenance of private dams and other water control works.

Great Lakes water levels and flows are continuously monitored through reports and information obtained from the International Lake Superior Board of Control and the International St. Lawrence River Board of Control.

The Branch represents provincial interests on the Lake of the Woods Control Board in the regulation of Lake of the Woods and Lac Seul, and on the Ottawa River Regulation Planning Committee. The latter is developing recommendations for regulation of the Ottawa River, an operational application of a forecast model, development of a flood warning system, a liaison mechanism with St. Lawrence River regulation, and an Ottawa River Operating Committee.

Great Lakes Shore Management

The Branch aids in the development of shoreland management policies and provides technical expertise for the alleviation of flood and erosion damage and other detrimental environmental effects along Great Lakes shores.

Current efforts are aimed at implementing recommendations presented in the *Canada/Ontario Great Lakes Shore Damage Survey Technical Report*, released in 1975. The main purpose of the survey was to compile data detailing the extent of the 1972-3 damage, to provide information on shore characteristics, and to make shoreland management recommendations.

A federal-provincial co-ordinating task force has been given the responsibility of directing follow-up programs to implement the Technical Report recommendations. This year, flood and erosion-prone area mapping has been prepared for the Great Lakes shore, extending from Ausable Beach on Lake Huron to Gananoque on Lake Ontario. The mapping and accompanying users guide were distributed jointly with the Ministry of Housing to municipalities and Conservation Authorities as planning aids to regulate land use within flood and erosion-prone areas. The project was completed jointly by Fisheries and Environment Canada and Ministry of Natural Resources with project management by the Branch.

A shoreland management study is presently under way in response to the Technical Report recommendation that methods be developed to evaluate shoreland management alternatives to mitigate flood and erosion damage. The three basic alternatives investigated are land-use regulation, public acquisition and structural protection. A 30 km length of Lake Erie shoreline in Gosfield South and Colchester South Townships is being used to develop and test methodologies.

Shoreland management alternatives will be assessed on the basis of land value, ownership, cost of protective works, erosion and recession rates, flood probability, related cost-benefit studies, and qualitative environmental evaluations. The results of the study will be generally applicable along Great Lakes shores and will be circulated to municipalities, Conservation Authorities and planning agencies.

Monitoring of shoreline processes has been undertaken as recommended by the Technical Report to ensure maintenance of current information on shore characteristics. Ground profiles are taken annually and after major storms at about 165 permanent erosion stations established on the Great Lakes.

The Branch is a member of the Working Committee of the International Diversions and Consumptive Uses Board

and of the Working Committee and Coastal Zone Subcommittee of the International Lake Erie Regulation Study Board. These study boards were established by the International Joint Commission on the Great Lakes. The Lake Erie study has adopted models developed by the Branch as a base for a common Canada-United States flood and erosion damage evaluation methodology.

Resource Access Roads

Co-ordination and consultation were provided for the construction and maintenance of forest access roads, and assistance is given on an ongoing basis to the Northern Ontario Resource Transportation Committee secretariat.

A total of 5,608 miles of forest access, Ministry service, public transport and agreement forest roads were maintained. This is a slight increase over the number of miles maintained in the previous year.

The Ministry shared, by agreement, the cost involved in maintaining 434 miles of private forest roads constructed by industry.

The Ministry of Northern Affairs provided funding for and reconstruction in southern Ontario resulted in the completion of 44 miles.

The Ministry of Northern Affairs provided funding for the construction and reconstruction of the following in support of Ministry programs in northern Ontario:

1.	Normal Program – forest access roads and bridges	202 miles
2.	Regional Priority Budget – forest access roads	20 "
3.	Northern Ontario Resources Transportation Committee	
	(a) forest access roads, bridges and other projects	29 "
	(b) winter roads (Round Lake)	35 "
	(c) snowmobile trails	100 "

Provincial Response to Flood Emergencies

The Ministry was designated "lead Ministry" by Cabinet in 1975 to co-ordinate the response of the Government of Ontario for flood emergencies. The Ministry appointed a Provincial Co-ordinator and established a program under which district managers are responsible for developing district plans for mobilizing, co-ordinating and delivering the available resources of this Ministry and other provincial ministries to flood emergencies declared by the Minister. The Branch administers the program on behalf of the Provincial Co-ordinator.

Fleet and Mechanical Equipment

The Branch maintains a vehicle fleet and equipment management system which permits planned acquisition, disposal, repair and replacement to ensure safe operation of Ministry vehicles and mechanical equipment.

The Ministry fleet increased by 30 vehicles, nine snowmobiles, two trail bikes and eight tractors and all-terrain vehicles. This raised the fleet fixed complement to 1,613* vehicles, 528 snowmobiles, 318 tractors and all-terrain vehicles, and 887 boat and equipment trailers.

The effective size of the operating fleet is increased during summer months by taking delivery of new vehicles in the spring, but holding vehicles to be replaced until fall. Replacement equipment purchased included 181 vehicles, 42 snowmobiles and eight tractors.

**Over-all fleet size decreased due to transfer of vehicles to other ministries, e.g., Northern Affairs.*

Conservation Authorities Branch

The objective of the Branch is to encourage the conservation and use of water and related land resources by Conservation Authorities by providing policy, funding assistance, and management and planning direction to the Authorities.

The 38 Authorities cover most of Ontario south of the Laurentian Shield as well as sections of northern Ontario around North Bay, Sault Ste. Marie, Sudbury, Timmins and Thunder Bay. They undertake a wide variety of programs to further the conservation, restoration, development and management of the renewable, natural resources of their watersheds.

The Conservation Authorities Act ensures a provincial-municipal arrangement. The membership of each Authority includes representatives of all municipalities situated wholly or partially within the watershed and up to three members appointed by the Province. Consequently, the initiative and sense of responsibility of the local communities are combined with the technical and financial resources of the Province to protect and develop the watersheds of Ontario.

A Conservation Authority is formed as a result of a resolution from two or more municipal councils that petition the Minister of Natural Resources to convene a meeting for that purpose. If the vote of the municipal representatives is favorable, the Authority is established by an Order-in-Council. The Authority's boundaries are then defined on a watershed basis. They may include a single watershed, such as the Grand River system, or a number of smaller and adjacent watersheds such as the Cataraqui Region.

Conservation Authorities place a particular emphasis on water and related land management. They are also involved with auxiliary programs oriented to land use, forestry, fish and wildlife, outdoor recreation and conservation education.

All programs undertaken by the Authorities must have the approval of the Minister of Natural Resources. Each program involves a wide variety of resource management projects that receive financial assistance. Provincial grants are provided through the Conservation Authorities Branch. In some water management projects, the federal government may also participate. The Authority raises its share of the funding by levying its member municipalities and by receiving aid from other sources.

Fourteen Authorities employ a general manager or director of operations to supervise their programs under the direction of a chairman. Resources managers are supplied by the Province in 24 Authorities, including three instances where the services of a manager are shared by two Authorities.

Conservation Authorities relate to the Ministry's field organization at the regional level. Four regions have program supervisors to assist the Authorities in planning and implementing their resource management programs.

Administration

A new grant structure, that updates the formula to reflect current priorities within the Conservation Authorities program, was approved in 1977 and became effective in 1978. The basic grant rate for administration remains at 50 per cent, while the basic grant rate for the water and related land management program was raised from 50 to 55 per cent. No other rates will apply within this program. The conservation and recreation land management program basic grant rate remains at 50 per cent; however, the supplementary grant rates will be phased out by 1981.

The junior conservationist award program introduces students between 16 and 18 years of age to a spectrum of conservation values and to technical conservation skills. The 1977 summer program involved 35 students who undertook projects proposed by Authorities in five watersheds.

Under the Experience '77 program, the 1,250 students

Branch Administration Costs

Field Services	$ 887,718.00
Program Planning and Land Management	355,996.00
Water Management Engineering	639,671.00
Junior Conservationist Program	61,822.00
Field Surveys	49,512.00
Employee Benefits	194,293.00
TOTAL	2,189,012.00

Grants to Authorities, 1977-78

UNDER THE CONSERVATION AUTHORITIES ACT

Ausable Bayfield C.A.	$ 312,271.93
Cataraqui Region C.A.	548,073.37
Catfish Creek C.A.	44,335.19
Central Lake Ontario C.A.	635,021.93
Credit Valley C.A.	2,411,728.18
Crowe Valley C.A.	606,274.39
Essex Region C.A.	437,989.34
Ganaraska Region C.A.	261,533.05
Grand River C.A.	3,306,050.79
Halton Region C.A.	1,199,413.20
Hamilton Region C.A.	1,143,901.18
Kettle Creek C.A.	211,260.99
Lakehead Region C.A.	291,847.14
Long Point Region C.A.	288,221.19
Lower Thames Valley C.A.	514,552.93
Lower Trent Region C.A.	266,437.20
Maitland Valley C.A.	361,731.32
Mattagami Region C.A.	441,754.29
Metropolitan Toronto & Region C.A.	4,371,070.38
Mississippi Valley C.A.	700,351.85
Moira River C.A.	1,075,284.51
Napanee Region C.A.	164,467.14
Niagara Peninsula C.A.	485,228.71
Nickel District C.A.	303,441.55
North Bay-Mattawa C.A.	44,936.47
North Grey Region C.A.	451,802.59
Nottawasaga Valley C.A.	252,467.00
Otanabee Region C.A.	315,026.38
Prince Edward Region C.A.	142,936.60
Raisin Region C.A.	120,057.77
Rideau Valley C.A.	736,765.25
Sauble Valley C.A.	115,628.25
Saugeen Valley C.A.	545,766.59
Sault Ste. Marie Region C.A.	848,861.71
South Lake Simcoe C.A.	610,389.88
South Nation River C.A.	526,323.14
St. Clair Region C.A.	1,201,648.79
Upper Thames River C.A.	1,188,442.38
TOTAL	$27,483,294.55

UNDER EXPERIENCE '77

Grants to Conservation Authorities	$ 2,047,285.87

hired by the Branch and the Conservation Authorities gained valuable insight into resources management by undertaking projects such as the development of nature trails in conservation areas, restoration of historical sites, removal of debris from water courses, construction of river-bank retaining walls, and compilation of wildlife inventories.

Water and Related Land Management

Programs within this section relate to water management and flood control and therefore include projects such as flood plain mapping, environmental assessment, dams, channel improvements, erosion control structures, and water quality monitoring.

A flood control diking project on the Pretty River in Collingwood was completed by the Nottawasaga Valley Conservation Authority.

The Halton Region Conservation Authority undertook Phase Four of the Roseland Creek Channelization project in Milton.

Acquisition of valley lands in Peterborough was initiated by the Otonabee Region Conservation Authority as part of a flood plain management program.

Numerous flood plain mapping and acquisition projects were carried out by several Authorities.

The South Lake Simcoe Conservation Authority carried out preliminary engineering studies for water control projects in Newmarket, Lefroy/Bell Ewart, Holland Marsh and Schomberg.

The Essex Region Conservation Authority initiated construction of the Windsor Seawall.

Major channel improvements were carried out in the Credit Valley, Lower Thames Valley and Grand River Authorities.

The St. Clair Region Conservation Authority commenced construction of the Sarnia Seaway Centre (Phase One, which is an erosion control retaining wall).

A program of extensive land acquisition was carried out by the Upper Thames River Conservation Authority for the Glengowan Dam and Reservoir, and by the St. Clair Region Conservation Authority for the Wilkesport Dam and Diversion.

Reconstruction of the Town Creek channel was begun by the Mattagami Region Conservation Authority.

Final design was completed for the Nickeldale Reservoir by the Nickel District Conservation Authority.

Construction of the Marmora Dam was completed within the Crowe Valley Conservation Authority.

The majority of construction of the Belleville Ice Control Dam was carried out by the Moira River Conservation Authority and the dam was operational in the winter of 1977.

The Sydenham Dam, located within the Cataraqui Region Conservation Authority, was completed.

The South Nation River Conservation Authority began construction of the Chesterville Dam.

Phase One of the Graham Creek Flood and Erosion control project in Ottawa was completed by the Rideau Valley Conservation Authority.

Construction of the Lanark Dam, located within the Mississippi Valley Conservation Authority, was completed.

Progress was made on a flood control plan through channelization works on Highland Creek, and several watershed studies were carried out to update the plan within the Metropolitan Toronto and Region Conservation Authority.

Conservation and Recreation Land Management

This program includes projects related to land acquisition for conservation areas, development and landscape protection, reforestation and woodlot management, outdoor recreation, information and outdoor education, fish and wildlife inventories, and pollution abatement.

There were major capital developments in several areas. For example, Kettle Creek Conservation Authority undertook extensive development of a campground and picnic area just north of St. Thomas.

Lower Trent Conservation Area completed development of a greenbelt along the Trent River in Trenton.

The preparation and subsequent approval of master development plans for 16 conservation areas were carried through by the following Conservation Authorities: Grand River, Ganaraska Region, South Lake Simcoe, Central Lake Ontario, Lower Trent Region, Nickel District, North Grey Region, Sault Ste. Marie Region, Metropolitan Toronto and Region and Mattagami Region.

The St. Clair Region Conservation Authority acquired property for the St. Clair-Huron Waterfront Program and

initiated erosion control as well as the development of recreational facilities on the Lake Huron Shore north of Sarnia.

The North Grey Region Conservation Authority acquired two properties in the Owen Sound area for the Bayshore Development Project where the development of five major recreational nodes will be undertaken over the next few years. It also completed construction of the new Authority office.

The Essex Region Conservation Authority acquired 276.5 acres of valley land along the Canard River in Anderdon Township, south of Windsor. This land exhibits potential for a variety of water management and recreational and educational/interpretive activities.

The Grand River Conservation Authority acquired 116 acres of valley land for the enlargement of the Hanlon Creek Area in Guelph.

The Halton/Hamilton Region Conservation Authorities jointly acquired several properties along the Hamilton-Burlington beach strip for conservation and recreational purposes.

Rattray Marsh was acquired by the Credit Valley Conservation Authority and the Ashbridges Bay Waterfront Area was opened by the Metropolitan Toronto and Region Conservation Authority as part of the Lake Ontario Waterfront program.

The Niagara Peninsula Conservation Authority acquired property for the Wainfleet Wetlands Conservation Area in the Township of Wainfleet.

Under the information and outdoor education programs, The Kortright Centre for Conservation was completed by the Metropolitan Toronto and Region Conservation Authority and the Dundas Valley Trails Centre was completed by the Hamilton Region Conservation Authority.

The Raisin Region Conservation Authority constructed boat launching facilities, floating docks, and associated service buildings on Gray's Creek Conservation Area just outside Cornwall.

Aviation and Fire Management Centre

The Aviation and Fire Management Centre was established on February 1, 1978, with the amalgamation of Forest Fire Control and Air Service Branches. Main office elements were moved to the Air Service location in Sault Ste. Marie and the new Centre was scheduled to be operational by April 1, 1978. It is headed by a director who reports to the Assistant Deputy Minister for northern Ontario.

Fire Management

The 1977 occurrence of 2,049 fires was above the decade (1968-77) average of 1,867 fires per year. The 1,028,739 acres burned over in 1977 exceeded the average of 390,572 acres.

It was anticipated that the fire season would be a severe one as the 1976 fire occurrence was one of the worst on record for Ontario. The severity of that season was directly attributed to weather, and probably to the climatic changes in parts of the Province during the preceding three years. A number of firmly established drought areas were defined and no relief was expected before the 1977 fire season.

As was expected, the 1977 fire season started early and was explosive for the first few weeks. By the end of May, Ontario had experienced nearly 1,200 forest fires, almost double the number recorded for the same period in 1976. After this point, however, the weather pattern changed and a significant amount of rain fell over most of the Province during the remainder of the fire season.

All but 60 of the recorded fires occurred within the area of intensive protection. Despite this, the area burned in 1,989 fires was limited to 87,518 acres or 8.5 per cent of the total.

Fire Prevention

Under the enhancement program, a team was established to develop material and to spearhead an over-all fire prevention campaign.

An audio-visual slide-type presentation was developed on forest fire prevention, drought conditions in the 1976 fire season, and the expected 1977 fire season. Ten 60-second radio advertisements were made in English and French.

Other prevention materials were developed as follows: nine assorted prevention advertisements; a 60-second spot (animation) titled "The Most Dangerous Animal"; miscellaneous items such as bumper stickers; a pocket folder used for handout material, T-shirt decal and button; and a placemat. Several brochures were developed and a poster entitled "Burning up the Tracks" was designed for railway use. Seven adhesive vinyl signs with messages were added to the fire prevention material.

Training

In anticipation of a severe fire season, the Management Board of Cabinet provided special funds in advance of the fire season in response to an "enhancement program" developed by the former Forest Fire Control Branch. This program gave increased attention to Ontario's fire prevention, detection and initial attack capabilities.

Fifty additional unit fire crews (250 men) were hired under the enhancement program. To meet their training needs, three Fire Course Is, two more than normal, were held in the early spring.

A one-week weather course was conducted by seasonal weather technicians in late autumn. As an aid to this course, a slide/tape program, entitled "Intermediate Fire Behaviour," was produced.

Two AGA tronics Thermovision units purchased last spring were used in a two-day course held in Thunder Bay at the start of the summer. This course was presented jointly by the AGA tronics Ltd. and the Northern Forest Fire Research Institute with Ontario acting as host. Candidates from the eastern provinces to Saskatchewan were in attendance. Five one-week fire accounting courses were conducted during the winter and early spring.

Development Work

During 1977, 19 projects were undertaken in the area of equipment development and evaluation. The initial draft of the Forest Fire Suppression Equipment Standards Manual was made available to field staff in the spring of 1977. Two AGA tronics Thermovision 750 units and four Probeye infrared scanners were purchased and evaluated. Operational experience gained with these units has confirmed their value in mop-up operations. One project involved various types of sprinkler units and systems which were tested on prescribed burns and wildfires in two districts.

Other equipment development and evaluation projects were undertaken in the following areas: metric hose and quick-connect couplings, propane camp kit, burnout torches, back-pack pumps, root soaker tool, intake hoses, military water heaters, Gorman-Rupp Model 61½ FI-S282 fire pump, hose washers, hose repair, hose drying sleeve, and freeze-dry and frozen foods.

Work was continued on the following projects initiated in previous years: forest fire occurrence prediction, equipment inventory, detection aircraft utilization, provincial firelog, and the fire weather index calculation program.

Two projects were initiated. A fire behaviour prediction computer program for jack pine slash was developed to predict the behaviour of fire in jack pine logging slash. A pre-

scribed burn fire weather prescription analysis computer program was developed to provide an analysis of the occurence of prescribed weather conditions in previous years.

The Quetico Park Fire Ecology project, which was initiated in 1975 to provide information on the role of fire in Quetico Provincial Park, was terminated in 1977. The results of the project were documented in a series of eight reports.

A Fire Management Information project was initiated in 1976 to make a systematic study of the existing information system for fire management, identify problems and areas for improvement, and ultimately develop a master plan for the system. An interim report of the project findings was released in 1977.

Support was continued for three co-operative projects of the Great Lakes Forest Reseach Centre. These projects were in the areas of fire behaviour studies, wildfire ecology-effects studies, and precribed fire.

Aviation

With the purchase and conversion of seven De Haviland Otter aircraft from Crown assets, the Ministry fleet now stands at 45 aircraft. These aircraft were operated from 20 bases of which 11 were open the year round.

During the year, Ministry aircraft flew a total of 16,015 flying hours and delivered a total of 863 tons of cargo. Mercy and rescue flights accounted for 15.3 flying hours on 10 flights.

Finance and Administration Group

The Finance and Administration Division was renamed Group on December 1, 1977, and its six constituent branches were all named services branches to underline their supportive role in the Ministry's organization. Financial Management was renamed Financial Services Branch.

Administrative Services Branch

The Branch is a support group providing the adminstrative services that lie outside the personnel and financial fields.

Services Section

The responsibilities of the Section manager include the co-ordination of the Ministry's consumer service and energy conservation programs.

The co-ordinator of hospitality and parking is responsible for arranging Ministry functions and air transportation and co-ordinating Ministry parking.

Office Management

The unit is responsible for the following:

Design, issue and replacement of uniforms;

Continual updating of the Ministry's listings in telephone directories across the province;

Issue of identification cards and telephone credit cards to Ministry staff;

Distribution of government manuals and their revisions as well as the Ministry's policy and procedure directives;

The equipment inventory control system and main office equipment inventory control records;

The copy room which provides printing services for main office;

The mail room and messenger service; and

The telex operation at main office.

Data Processing

The unit accepts for keying the source documents for the Ministry's production data processing systems; schedules, submits and receives computer runs and sees that reports are distributed to user branches; maintains Ministry magnetic tape library; administers the Ministry's magnetic tapes retained in the library of the Central Computing Branch; maintains sufficient systems documentation to enable a contract programmer to carry out maintenance or minor revisions when requested by user branches; assists user branches in identifying computer problems and suggests means of rectifying problems; and keys data from source documents onto magnetic tape or tab cards in a predetermined format. The cards and tapes are interpreted by the Ministry's computer programs to produce the desired reports.

Public Service Centre

The Centre is responsible for the sale and distribution of Ministry publications, maps and aerial photographs. The maps handled include the Provincial Topographic series, the National Topographic series and releases of the Ministry of Transportation and Communicatons.

A Natural Resources information booth on the main floor of Whitney Block provides information to callers and handles general enquiries by telephone.

Supply Section

Supply Management

The unit is responsible for co-ordinating Ministry procurement policy and assisting Ministry offices on procurement matters. Duties include the issue and revision of directives of purchasing, preparation of standard purchase forms and specifications, assistance in preparing contract documents and tendering needs, and co-ordination of the purchasing officer training program.

Purchasing

The unit is responsible for the purchase of most goods and services for main office and for a few field offices. The unit acts as the Ministry's liaison with the Ministry of Government Services in the purchase of office furniture and furnishings. It establishes bulk purchase agreements and standing offers where feasible, and it offers assistance and guidance on the research and development of new sources of supply.

Central Supply Warehouse

The warehouse provides a warehousing and distribution service for items such as forms, publications, maps, uniforms and hunting and fishing licences. It is located at 733 King Street West, Toronto, and also has an office in the basement of Whitney Block. The office provides white prints for Ministry offices and the public.

Records and Forms Management Section

The Section is responsible for application of effective program techniques, as required by the Manual of Administration, and for the provision of technical advice to all sectors of the ministry.

Records Management

The unit is responsible for maintaining an accurate inventory of all records, records equipment and microrecording equipment; control over the initiation, maintenance, protection, retention and disposition of all Ministry records; conducting feasibility studies regarding all microrecord systems and submitting all proposals to senior management for approval and to Management board when necessary; conducting training seminars for the Ministry in all aspects of records management; and developing Ministry file classification plans.

Forms Management

The unit is responsible for establishing, maintaining and reviewing an inventory of Ministry forms; reviewing and approving all requests for forms printing; improvement in design of necessary forms by adherence to Ministry and government-wide design standards; providing forms analysis and design service to users; providing technical guidance to form originators; and conducting training seminars in forms management and design for Ministry personnel.

Accommodation Section

The basic role of the Section is the assessment of the accommodation needs identified by each program, the annual preparation of the Ministry accommodation plan for submission by the Ministry of Government Services to Management Board for funds, the co-ordination of services thus provided, and the control of individual accommodation projects. The role relates to the provision of new capital and leased facilities and the upkeep of existing facilities.

The year's tasks included the co-ordination of the reorganization and renovation of 75,000 square feet of floor space in Whitney Block.

Personnel Services Branch

Senior Administration Staff

March 31, 1978

Deputy Minister

Dr. J. K. Reynolds

Assistant Deputy Ministers

L. Ringham, *Northern Ontario*
W. T. Foster, *Southern Ontario*
A. J. Herridge, *Policy and Priorities.*

Executive Co-ordinators

J. W. Lockwood, *Forest Regeneration*
D P. Drysdale, *Program Management Evaluation*
A. H. Peacock, *Forest Resources Group*
G. A. Jewett, *Mineral Resources Group*
L. H. Eckel, *Outdoor Recreations Group*
J. W. Keenan, *Lands and Waters Group*
G. D. Spry, *Finance and Administration Group.*

Regional Directors

G. A. McCormack, *Northwestern (Kenora)*
R. A. Baxter, *North Central (Thunder Bay)*
J. R. Oatway, *Northern (Cochrane)*
W. G. Cleaveley, *Northeastern (Sudbury)*
K. K. Irizawa, *Algonquin (Huntsville)*
T. W. Hueston, *Eastern (Kemptville)*
R. M. Dixon, *Central (Richmond Hill)*
N. D. Patrick, *Southwestern (London).*

Directors

W. K. Fullerton, *Forest Resources Branch*
E. Markus, *Timber Sales Branch*
Dr. E. G. Pye, *Ontario Geological Survey*
Dr. T. P. Mohide, *Mineral Resources Branch*
K. H. Loftus, *Fisheries Branch*
R. J. Vrancart, *Provincial Parks Branch*
J. D. Roseborough, *Wildlife Branch*
J. McGinn, *Lands Administration Branch*
R. A. Riley, *Land Use Co-ordination Branch*
R. G. Code, *Surveys and Mapping Branch*
S. B. Panting, *Engineering Services Branch*
R. J. Burgar, *Conservation Authorities Branch*
W. L. Sleeman, *Aviation and Fire Management Centre*
G. A. Hamilton, *The Leslie M. Frost Natural Resources Centre*
A. C. Goddard, *Financial Services Branch*
H. B. Farrant, *Personnel Services Branch*
J. A. Queen, *Administrative Services Branch*
A. A. Ward, *Internal Audit Services Branch*
F. Moritsugu, *Information Services Branch*
Miss M. Mogford, *Policy Co-ordination Secretariat*
G. P. Elliott, *Management Improvement Office*

Head

Dr. D. Burger, *Ontario Forest Research Centre*

District Managers

W. D. Adlam, *Ottawa District*
R. P. Alton, *Wawa District*
E. N. Arbuckle, *Espanola District*
J. R. Bailey, *Lanark District*
R. G. Bailey, *Napanee District*
M. P. Barker, *Atikokan District*
L .L. Bronson, *Pembroke District*
W. R. Catton, *Cambridge District*
J. K. Cleaveley, *Geraldton District*
D. J. D'Agostini, *Fort Frances District*
P. R. Davidson, *Aylmer District*
J. E. Dickenson, *Niagara District*
C. Dionne, *Gogama District*
T. E. Dodds, *Ignace District*
I. B. Earl, *Maple District*
C. E. Emblin, *Hearst District*
H. P. Endress, *Dryden District*
E. W. Everley, *Red Lake District*
D. R. Fortner, *Chatham District*
O. Goodman, *Bancroft District*
C. R. Gray, *Lindsay District*
L. J. Haas, *Terrace Bay District*
D. L. Hagar, *Blind River District*
J. E. Hamilton, *Thunder Bay District*
G. O. Koistinen, *Nipigon District*
R. G. Lightheart, *Kapuskasing District*
W. J. Lovering, *Owen Sound District*
W. D. Mansell, *Wingham District*
R. B. McGee, *Simcoe District*
D. B. McGregor, *Kenora District*
D. E. McHale, *Sudbury District*
J. G. Minor, *Kirkland Lake District*
J. R. Morin, *Cornwall District*
D. J. O'Grady, *White River District*
A. F. Papineau, *Timmins District*
W. R. Peck, *Parry Sound District*
C. E. Perrie, *Sioux Lookout District*
E. Rogers, *North Bay District*
J. E. Rumney, *Temagami District*
J. R. Russell (Acting), *Chapleau District*
W. D. Schafer, *Huronia District*
J. H. Sellers, *Sault Ste. Marie District*
J. A. Simpson, *Algonquin Park District*
A. J. Stewart, *Moosonee District*
R. W. Tippett, *Bracebridge District*
R. H. Trotter, *Brockville District*

D. D. White, *Minden District*
G. A. Wright, *Cochrane District*
W. Vonk, *Tweed District.*

Total Staff

March 31, 1978	Regular	Probationary	Unclassified	Total
Main Office	815	91	284	1,190
Field Offices	2,799	159	1,767	4,725
Total	3,614	250	2,051	5,915

Total Complement of Positions	4,012
Vacancies in Complement	148
Regular and Probationary Staff	3,864
New Employees Hired 1977-78	250

Professional Staff

March 31, 1978

Biologists	123
Engineers	12
Economists	7
Foresters	288
Geologists	68
Park Planners	42
Scientists	55
Miscellaneous	54
Total	649
Resource Technicians	1,512
Licensed Scalers	1,165

Staff Turnover*

March 31, 1978

Deceased	9
Transferred	49
Released	1
Resigned	91
Dismissed	1
Retired	95
Total	246

*The ratio of separations to the total of regular and probationary staff at March 31, 1978, was 16 per cent.

Safety

Safety Programme Development Section was occupied with the following activities during the past year: training of main office staff in first aid; vehicle driver improvement; fire safety procedures; water safety; supervisory training in accident control; job safety planning; inspection of work areas and equipment vehicles; and public safety in Provincial Parks and on Crown lands.

The following numbers of staff were trained as noted:

Driver Training/Testing	2,570
First Aid Courses	1,723
Defensive Driving Courses	1,382
Interim Driver Testers	35
Workshop – Cardio Pulmonary Resuscitation	40
– Snowmobile	205
– Lateiner Accident Investigation	131
– Chainsaw and Axe	910
– Resuscitator	208
– Park Emergency Training	490
– Explosives Training	58
– General Safety Talks	162
– Total Workshops	292
Boating Safety Practices	122
Beach Patrol Swimming Test	23
Safety Audit Inspections (Provincial Parks), MNR buildings, facilities and equipment	1,242
Investigations (general injuries, motor vehicle accidents)	280
General Safety Training	
Experience '77	60
Junior Rangers	586
Foremen Training	37
General Public	190

Affirmative Action Program

The Women's Co-ordinator is responsible for providing assistance and guidance to managers at all levels in the implementation of the Government's policy on Affirmative Action by co-ordinating the Ministry's Affirmative Action Plan; providing research, information and other support services; encouraging the participation of female employees in program initiatives; and evaluating the results.

During the year, managers were assisted in establishing measurable outputs and related commitments; presentations were made to divisional and regional meetings; information packages were developed; interview and performance appraisal forms were refined and distributed; and individual consultations were held. A survey of attitudes of male and female employees was completed.

Work was begun for a report on job restructuring and job rotation. Technical assistance was provided to a Ministry employee researching the employment history of female foresters in Canada. The updating and indexing of a resource centre on equal-opportunity subjects was continued. A paper analyzing structural barriers to equal opportunity was produced.

The summer outreach program was continued as in the three previous summers. A session on equal opportunity was presented to 688 young women at 26 Junior Ranger camps. Post-session evaluations indicated that the students were now discussing these issues in their high school courses. A film on typical jobs in the Ministry, showing both males and females, is being produced in co-operation with Information Services Branch. Preliminary work on establishing an outreach recruiting network was undertaken and will be completed by September, 1978.

Success of the program is dependent in part on encouraging and involving female employees. A three-day conference was organized in April, 1977, for the 63 Affirmative Action representatives to begin the process of establishing practical objectives and activities and the basis for carrying them out. In consultation with management, terms of reference for the Affirmative Action Committee were established.

Branch and divisional representatives at main office formed a Queen's Park Affirmative Action Council. Activities undertaken by these representatives and the women in their units varied widely by district and region but included courses, regional meetings and work-shops, collection of work-force data, inventories of female employees, and special studies.

Slight gains have been made since the start of the program in the numbers of women employed in the Professional Module and the Clerical Services. All other categories remain relatively consistent. Women employees, who total 701, represent approximately 18 per cent of the Ministry's classified staff. Of these, 609 (87%) are in the Clerical and Office Services. Constraints on hiring have made it difficult to change this representation, given the professional and technical nature of the majority of positions within the Ministry.

The Ministry is receptive to, and supportive of, women as an integral part of both the professional and technical staff as demonstrated by the individual commitments of managers to the Affirmative Action Management by Results Plan for 1977 and 1978. Female summer students are being hired in all disciplines within the Ministry, and female graduates make up a fair proportion of the seasonal unclassified staff.

Of the women in the clerical and office services categories, many are presently upgrading their skills through on-the-job training, i.e., job rotation and job enrichment, while others have elected to obtain further education through university and community college extension programs.

Financial Services Branch

The Branch provides accounting and financial administrative support services for the Ministry. It maintains records of revenue and expenditure, prepares financial statements, and supervises and co-ordinates the accounting functions of main office and field offices. Its responsibilities include appropriation control, development of accounting and financial reporting systems, development and distribution of financial procedures, financial and cost analyses, pre-audit controls and procedures, preparation of claims under federal-provincial and sundry other agreements, and control of security deposits.

The Branch also provides financial liaison with the Management Board of Cabinet, the Ministry of Treasury, Economics and Intergovernmental Affairs, the Provincial Auditor, other ministries and agencies and the Government of Canada.

Financial Report

Statement of Revenue in 000s for year ended March 31, 1978

MINISTRY ADMINISTRATION			
Recovery of Prior Year's Expenditures			
Cheque cancellation	$ 15.5		
Accident claims	12.4		
Salaries and employee benefits	11.6		
Duplicate or overpayments, credit notes and goods returned	11.4		
Miscellaneous	2.5	$ 53.4	
Sales			
Maps, publications, etc.	$ 507.1		
Electrical power	21.2	528.3	
Rentals – Ministry Houses		457.7	$ 1,039.4
LAND MANAGEMENT			
Recovery of Prior Year's Expenditures			
Land Acquisition	$ 19.0		
Conservation Authorities	12.6		
Remote Sensing	8.5		
Miscellaneous	7.5	$ 47.6	
Taxation – Mines acreage tax		610.9	
Royalties – Forest protection charges		2,232.5	
Fees and licences – Mines		455.2	
Public Domain			
Leasing and licensing of lands	$ 1,141.0		
Gas and mining leases	802.5	1,943.5	
Sales			
Equipment	$ 869.4		
Land and buildings	231.7		
Sundry sales	14.9	1,116.0	
Reimbursements of Expenditures – Government of Canada			
Flood risk mapping and area flood damage reduction measure	$ 643.3		
ARDA –Conservation Authorities	455.2		
Dams, reservoirs and channel improvements	1.7	1,100.2	
Reimbursements of Expenditures – Others			
Recovery of Fire Fighting costs	$ 835.7		
Maintenance of (6) dams in Little Turtle River, district of Rainy River	550.0	1,385.7	8,891.6
OUTDOOR RECREATION			
Recovery of Prior Year's Expenditures			
Nanticoke Agreement	$ 12.8		
Miscellaneous	7.4	$ 20.2	
Recreation Areas			
Park entrance and camping fees	$ 4,502.0		
Park concessions	246.0		
Park miscellaneous	43.8	4,791.8	
Fish and Wildlife			
Hunting and Fishing licences	$10,795.4		
Royalties	666.8		
Confiscated articles	84.0		
Miscellaneous – Fish and Wildlife	5.8	11,552.0	
St. Lawrence Parks			
Fees	$ 1,432.3		
Sales	1,289.5		

Facilities	104.9		
Miscellaneous	21.0	$ 2,847.7	
Reimbursements of Expenditures – Government of Canada			
ARDA – Extension of Redevelopment Area Parks	$ 371.8		
Rideau and Trent Canal Waterways and Adjacent Land Use Management	49.4		
Fisheries Industrial Development Agreement	33.7	454.9	$19,666.6
RESOURCE PRODUCTS			
Renewable Resource Development			
Recovery of Prior Year's Expenditures		$ 4.8	
Forest Management			
Stumpage	$30,776.4		
Forest products	253.5		
Stock production	213.1		
Miscellaneous timber	72.4	31,315.4	
Water Management			
Royalties – Water Power		13,715.9	
Reimbursements of Expenditures – Government of Canada			
Forest Management			
ARDA – Forest Stand Improvement	$ 686.8		
ARDA – Private Land Forestry	250.0		
ARDA – Expansion of County and Authority Forest in Ontario	45.6		
Commercial Fish and Fur			
Resource Development Agreement	187.2		
Fish Nutrition Study	95.0	1,264.6	
		$46,300.7	
Non-Renewable Resource Development			
Mining tax		$22,308.5	
Royalties (Mines)		1,065.8	
Commercial fishing licence		95.1	
Fees, licences		70.7	
Miscellaneous		2.3	
		$23,542.4	69,843.1
RESOURCE EXPERIENCE			
Frost Centre facilities			292.4
TOTAL REVENUE			$99,733.1

Statement of Expenditure in 000s for year ended March 31, 1978

MINISTRY ADMINISTRATION PROGRAM		
Main Office	$ 1,565.6	
Financial Services	2,448.0	
Supply and Office Services	2,300.7	
Personnel Services	798.4	
Information Services	1,506.7	
Analysis, Research and Planning	575.7	
Legal Services	434.7	
Audit Services	452.9	
Field Offices	11,429.8	
Total, Ministry Administration		$ 21,512.5
LAND MANAGEMENT PROGRAM		
Water Control and Engineering	$10,373.2	
Forest Protection	19,752.2	
Air Service	5,068.6	
Extra Fire Fighting	6,117.5	
Resource Access	4,594.0	
Land and Water Classification	7,405.2	
Land, Water and Mineral Title Administration	19,111.8	
Conservation Authorities	29,672.3	
Total, Land Management		$102,094.8
OUTDOOR RECREATION PROGRAM		
Recreational Areas	$28,413.4	
Fish and Wildlife	19,514.4	
St. Lawrence Parks Commission	7,227.7	
Total, Outdoor Recreation		$ 55,155.5
RESOURCE PRODUCTS PROGRAM		
Mineral Management	$ 8,128.8	
Forest Management	43,189.9	
Commercial Fish and Fur	2,160.3	
Algonquin Forestry Authority, The Algonquin Forestry Authority Act	30.0	
Total, Resource Products		$ 53,509.0
RESOURCE EXPERIENCE PROGRAM		
Junior Rangers	$ 4,016.7	
Youth Corps (Experience '77)	4,940.5	
Leslie M. Frost Natural Resources Centre	978.2	
Total, Resource Experience		$ 9,935.4
TOTAL BUDGETARY EXPENDITURE		$242,207.2

Information Services Branch

Exhibits

The Ministry's principal summer exhibit was moved to the Ontario Science Centre, Toronto, after 43 years at the Canadian National Exhibition, including the seven-year break during the war. The 24-day exhibit, August 26 to September 18, 1977, told about the Ministry's forest management program and featured innovations in displays and educational material which upgraded the quality of Ministry exhibits during the year. The exhibit was viewed by an estimated 90,000 persons.

The Branch prepared and managed exhibits at five other major events: Canadian National Sportsmen's Show, Western Fair, Central Canada Exhibition, Lakehead Exhibition and International Plowing Match. Exhibits were prepared for 29 smaller fairs and shows where the Ministry presentation was usually managed by field offices with support from the Branch.

News and Features

News material from main office branches and field offices was co-ordinated to step up the flow of acceptable news reports from the Ministry to the media. News releases were delivered to appropriate news outlets and particular attention paid to releases for regional and special media. Background information was provided for editors and broadcasters.

Outdoors Offbeat, a news feature service with photographs, was distributed periodically to news outlets, selected periodicals and outdoor writers – a total of 1,300 mailings.

Ontario Outdoors, a public service radio series, was supplied regularly to 55 Ontario stations. Each program featured Ministry services for 27 minutes.

Staff support and guest personnel were provided for TV and radio programs in Metropolitan Toronto and northern Ontario.

Material was mailed to 48,000 persons who asked for information on natural resources or outdoor recreation.

Publications

The publishing list grew considerably during the year as the Ministry released 47 books or large booklets, 24 smaller booklets, seven folders and 25 small folders or leaflets. These totals do not include scientific papers and technical reports and numerous leaflets on provincial parks and other installations and services.

The annual summary of fishing regulations and the annual information booklet for Junior Rangers were issued in French versions for the first time. Some provincial park publications were also produced in French.

New publications of main office branches and field offices included the following:

Background Information, Algonquin Park District
Background Information, Bancroft District
Background Information, Bracebridge District
Background Information, Minden District
Background Information, Parry Sound District
Background Information, Pembroke District
Background Information on the Development of a Co-ordinated Program Strategy, Southern Ontario
Boating Restrictions, Ontario, 1977
Carillon Provincial Park Master Plan, 1977 ($2.00)
Carillon Parc Provincial plan directeur, 1977 ($2.00)
Charleston Lake Provincial Park Master Plan, 1978 ($2.00)
Coping with the Great Lakes (co-op with Fisheries and Environment Canada)
Counts and Measurements of Ontario Lakes
A Discussion Paper on Flood Plain Management Alternatives
Flood Plain Criteria and Management Evaluation Study ($4.00)
The Forest Industry in the Economy of Ontario ($1.00)
A Guide for the Use of Canada/Ontario Great Lakes Flood and Erosion Prone Area Mapping ($1.50) (Maps, $2.75)
Kakabeka Falls Provincial Park Master Plan, 1978 ($2.00)
Killarney Provincial Park ($1.00)
Killbear Provincial Park Master Plan, 1977 ($2.00)
Mineral Aggregates in Ontario
Neys Provincial Park Master Plan, 1977 ($2.00)
Ontario's Conservation Authorities
Peters Woods Provincial Nature Reserve Master Plan, 1977 ($1.00)
Petroglyphs Provincial Park Master Plan, 1977 ($2.00)
A Pictorial History of Algonquin Provincial Park ($0.50)
Pinery Provincial Park Revised Master Plan Draft, 1977 ($0.50)
Point Farms Provincial Park Master Plan, 1977 ($2.00)
Polar Bear Provincial Park Background Information, 1977 ($2.00)
Polar Bear Provincial Park Planning Proposal, 1977 ($1.00)
Quetico Provincial Park ($2.00)
Quetico Provincial Park Master Plan, 1977 ($2.00)
Sandbanks Provincial Park Preliminary Master Plan, 1977 ($0.50)
Short Hills Provincial Park Master Plan, 1977 ($2.00)
Statistical Report on the Mineral Industry of Ontario, 1971-73 ($5.00)
Toronto Angler's Guide ($0.50) (co-op with Metropolitan Toronto and Region Conservation Authority)
Towards a Nickel Policy for the Province of Ontario ($25.00)
Vegetation Management for Wildlife in Ontario ($2.50)
Water Level Regulations in Muskoka
What to Do Outdoors in Central Region

A-V and Films

During the year a color motion picture on aerial forest fire fighting was produced for Forest Fire Control Branch. The 11-minute 16 mm film was screened on a network of northern Ontario TV stations.

Three motion picture news releases, filmed by staff, were widely used on Ontario TV stations.

An animated public service message on forest fire prevention was completed and shown on Ontario TV stations. A 35 mm film of the same message was distributed to a group of northern Ontario theatres.

Four public-service messages on preservation of wildlife habitat and game law enforcement were completed and distributed to Ontario TV stations.

A small screening room was completed to show films and audio-visual programs. Sixty Ministry groups booked the room in its first three months of use.

Staff photographers completed 187 photography assignments for Ministry programs. About 8,000 prints were produced in the darkroom.

The video tape library recorded and filed 30 video tape cassettes for Ministry personnel.

The motion picture library loaned 1,500 films to Ministry offices and educational groups.

Libraries

The Resources Library provides a variety of library services for staff in all Ministry offices and for outside persons seeking data on natural resources and other matters.

The Mines Library provides specialized services in its field for staff, students and people in the mining industry.

The Research Library, located in the Maple complex, provides technical and scientific material in disciplines related to Ministry activities.

Internal Audit Services Branch

The principal objective of the Branch is to provide independent evaluations and objective reports to management concerning accountability for activities at all working levels. During the year, the Branch produced approximately 100 such reports in addition to other activities.

The Branch is divided into four sections under managers located as follows: Northwestern Region office, Northeastern Region office, Maple District office and main office.

Legal Services Branch

During the fiscal year ending March 31, 1978, the Branch prepared and processed 48 regulations made under the authority of Acts administered by the Ministry and 447 Orders-in-Council. A total of 231 agreements was processed through the Branch. The total included three Federal-Provincial agreements, two relating to the development of fishery resources and one to the establishment of a new national park in the Thunder Bay District.

Policy and Priorities Office

The Policy and Priorities Office was established formally as of April 1, 1978, with the Assistant Deputy Minister, Policy and Priorities, supported by the Policy Co-ordination Secretariat and the Program Analysis Office. The new Office is responsible for the following:

The corporate development of co-ordinated policies to ensure integrated resource planning and management; and

The establishment of integrated but flexible Ministry and program priorities.

Policy Co-ordination Secretariat

The Policy Co-ordination Secretariat:

– Provides co-ordination, integration and communication services with regard to policy planning to the main office groups and to the regions to assist them in achieving the Ministry's objectives;

– Provides staff support to the Policy and Priorities Committee, the Minister's Policy Committee and other senior-level committees as required;

– Supports the production of new policy initiatives in conjunction with the relevant main office and regional staff;

– Provides support, advice and information to the main office groups and regions in assessing long-range policy needs and directions in the context of the Ministry's mandate and government objectives;

– Ensures the widest and earliest possible multi-functional consideration of policy proposals being developed within the Ministry;

– Ensures the necessary liaison with Cabinet and its committees, and with other Ministries; and

– Undertakes special policy co-ordination assignments at the request of the Assistant Deputy Minister, Policy and Priorities.

Program Analysis Office

The Program Analysis Office:

– Conducts and co-ordinates cost-effectiveness studies relating to Ministry programs and proposals (these studies aid in setting priorities for programs and assist main office groups and regions in achieving Ministry objectives);

– Co-ordinates the program planning and priority setting process in the Ministry and liaison with central agencies on Ministry estimates (this includes participation in the development of the Ministry's Management by Results commitments);

– Co-ordinates liaison with Management Board of Cabinet and its Secretariat on matters dealt with by the Board;

– Ensures necessary liaison with other Ministries for programs such as Regional Priority where the Ministry of Natural Resources carries out programs on behalf of other Ministries; and

– Provides support to the Policy and Priorities Committee in the analysis and development of the program aspects of policy issues and assists in the development of methods of assessing relative priorities among programs by the Committee.

Management Improvement Office

A Management Improvement Plan to bring about major changes in the Ministry organization and operation was announced on November 24, 1977.

The Management Improvement Office was established on December 1, 1977, with the following objective: "To direct, co-ordinate and monitor the implementation of the Management Improvement Plan and for the continuing improvement of management organization, systems and practices through 1980."

The new Office is headed by a director who reports to the Deputy Minister.

Twenty-five tasks were initially identified as specifics for the management improvement function. The tasks included human resources (manpower) planning, program management evaluation, policy and priorities system, information services, and private sector use. Other tasks were to be identified as the need became apparent.

Task forces were set up to deal with certain projects, and project co-ordinators were assigned to the Management Improvement Office.

Many of the major organizational changes were effected within the fiscal year. For example, the newly established Aviation and Fire Management Centre was moved from Toronto to Sault Ste. Marie, and the office of the Regional Director in Northeastern Region was moved from Sault Ste. Marie to Sudbury.

Program Management Evaluation

Program Management Evaluation was established on February 1, 1978, with the following two purposes: to develop a reliable and comprehensive management information system; and to develop mechanisms to improve management performance. The new office is headed by an executive co-ordinator who reports to the Deputy Minister.

The Mining and Lands Commissioner

The Commissioner exercises judicial, quasi-judical and administrative powers under The Beach Protection Act, The Mining Act and The Mining Tax Act, 1972, and regulations made under The Ministry of Natural Resources Act, 1972, assigning powers and duties of the Minister to the Commissioner.

Judgments, orders and reports issued by the tribunal during the fiscal year were as follows:

847 orders extending time for performing work or applying and paying for leases;

53 orders authorizing special renewal of licences;

75 miscellaneous judgments, orders and reports.

The total number of orders was 975.

Hearings under The Mining Act were held in Kirkland Lake, Red Lake, Sault Ste. Marie, Sudbury, Thunder Bay, Timmins and Toronto.

Appeals under The Conservation Authorities Act were heard in Ingersoll, Kitchener, London, Ottawa and Toronto.

Inquiries under The Lakes and Rivers Improvement Act were held in Cobourg, Cornwall, Kingston and Toronto.

Statutory Authority	Settled or Abandoned	Hearings Held
The Conservation Authorities Act	4	11
The Lakes and Rivers Improvement Act	–	6
The Mining Act	2	16
The Mining Tax Act, 1972	–	–
TOTAL	6	33